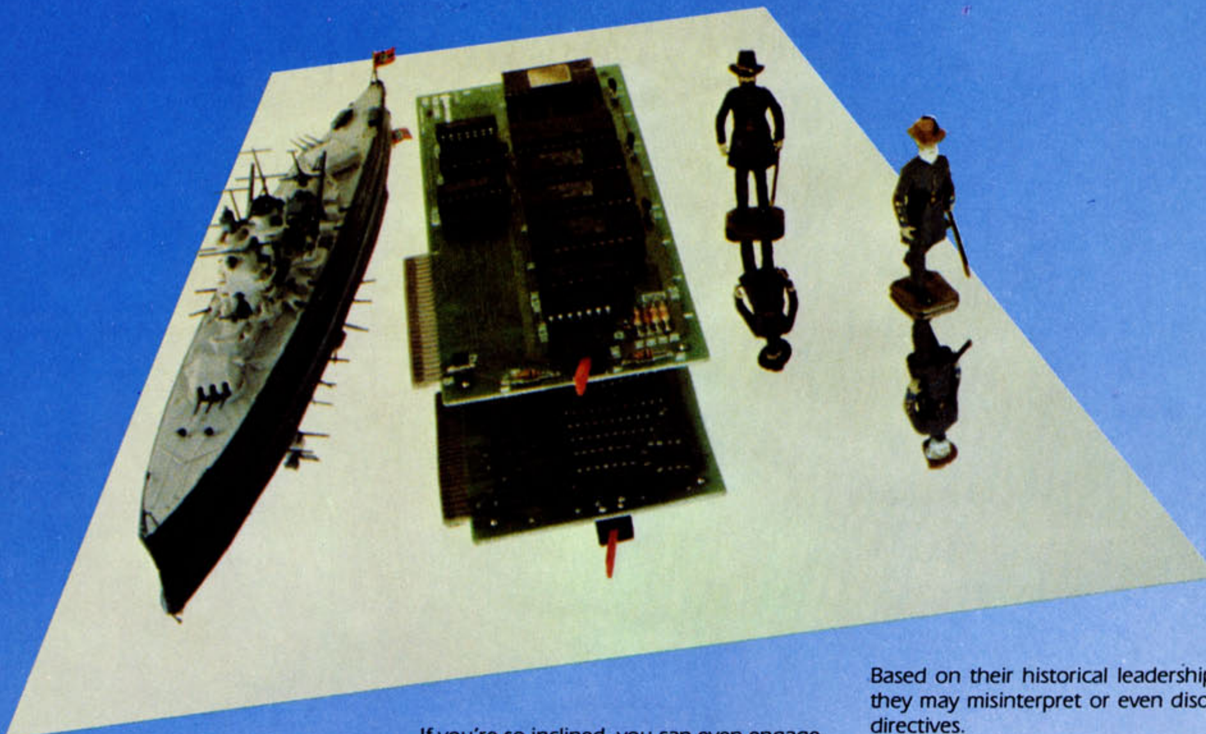
COMPUTER GAMING WORLD
VOL. 2 NO. 2
MAR. - APR. 1982
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WE BRING THE FUTURE TO THE PAST.



The future belongs to microcomputers.

At SSI, we apply tomorrow's programming techniques to re-create some classic battles of the past. As proof, we offer our latest games for the Apple® computer*: PURSUIT OF THE GRAF SPEE and THE ROAD TO GETTYSBURG.

PURSUIT OF THE GRAF SPEE™ transports you back to the South Atlantic of 1939 so you can command the deadly German pocket battleship to sink enemy merchant vessels while eluding British and French warships. Or you can direct the Allied fleet to locate and destroy the scourge of your shipping lanes.

If you're familiar with **Computer Bismarck** — which has become something of a phenomenon in gaming circles — you owe it to yourself to try this game. Like its older brother, PURSUIT OF THE GRAF SPEE has all the thrill of the chase, heightened by the complexity and richness of detail such as complete ship ratings for speed and strength, fuel restrictions, refueling capabilities, and realistic rules governing sighting and visibility.

However, we've also added a remarkable tactical combat system that accounts for gunfire accuracy, torpedoes and smoke screens. When it comes to calculating ship damage and battle results, you simply leave all the work to the computer, which does everything instantly and unerringly.

If you're so inclined, you can even engage in combat by using miniatures. Enter the results of your off-line battle and the computer will incorporate them into the strategic game.

This simulation contains two scenarios, all played on a 19-by-19 square-grid map of the South Atlantic displayed in colorful Hi-Res graphics. The first recounts the entire 25-day historic chase, where shadowing, pursuit and elusive maneuvers are your primary concerns. The second simulates the Battle of the River Plate, where the Graf Spee — already located — must deal with three British ships.

Finally, the solitaire scenario lets you match wits against the computer as it directs the Graf Spee. We wish you luck.

THE ROAD TO GETTYSBURG™ takes you even further back in time, to that fateful battle of 1863. This board-assisted computer simulation is designed to let you experience the actual feel of a Civil War command. Like a real Union or Confederate general, you must deal with the slow and frustrating dispatch system — your only means of communication with your troops. Knowledge of troop positions and estimates of enemy strength are only as good as your reconnaissance patrols.

The computer plays the individual corps commanders who implement your orders. Based on their historical leadership ratings, they may misinterpret or even disobey your directives.

Before you move a corps, you must consider the effects of weather, terrain, corps morale, fatigue, and even straggling on your troops.

THE ROAD TO GETTYSBURG simulates the entire week-long campaign. Depending on your strategies, the town of Gettysburg may not be involved at all.

For those who want to dispense with long-range planning, we've provided a scenario that just simulates the three-day Battle of Gettysburg. There is also a solitaire scenario so you can play anytime against a tough computer opponent.

Again, you can use miniatures to resolve all battles if you so desire.

This game is made for all you avid strategists out there. After you're done playing it, you'll really know the pleasure and pain of being a Robert E. Lee!

If you're interested in what the future has in store for the past, visit your local computer/game store and get these SSI games today. At $59.95 each, they must surely be the best bargain in time travel!

To order with your VISA or MC, call **toll free 800-227-1617, ext. 335** (800-772-3545, ext. 335 in California). To order by mail, send your check to Strategic Simulations Inc, 465 Fairchild Drive, Suite 108, Mountain View, CA 94043. All our games carry a 14-day money back guarantee.

*48K Apple® II with ROM and one floppy disc drive.

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As part of our demanding standards of excellence, we use maxell floppy discs.

WE'RE LOOKING FOR A FEW GOOD DESIGNERS. We're always on the lookout for high-quality games from independent designers. If you have game programs that you'd like SSI to publish, give us a call at (415) 964-1353 or write to SSI, 465 Fairchild Drive, Suite 108, Mountain View, CA 94043.

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Features

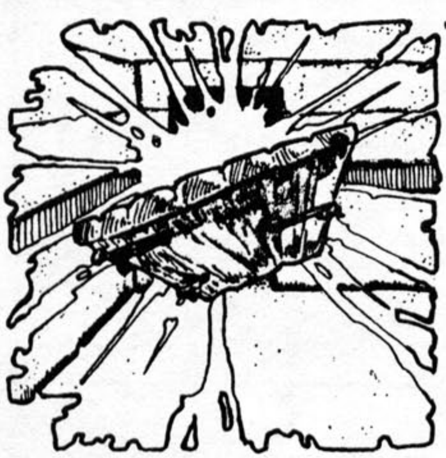
Departments

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Psalm 9: 1-2



From the Editor...

Each issue of CGW brings the magazine closer to the format we plan to achieve. This issue (our third) is expanded to forty pages. Future issues will be larger still.

In this issue we add a new regular department, **THE SILICON CEREBRUM. THE SILICON CEREBRUM**, written by Bruce Webster whom many of you will recognize from his writings in THE SPACE GAMER magazine, will concentrate on computer programming as related to game design and artificial intelligence.

You will also note in this issue that most games will have a small capsule description called "Basic Information". This feature was added due to the request of several readers. Your viewpoints are important to us. Speaking of your viewpoints, the last page of this issue is very important. We want to know what you think of the articles in CGW, what you think of certain ideas we have, and what you think of the computer games being covered in CGW. Please take time to respond to "Reader Input Device". Not only will it help us to know just what you want to read, it will also let the manufacturers know just what you think about the games on the market.

Our congratulations go to Richard A. Fowell whose robot, Norden+, won the Robotwar tournament. Richard shares in this issue the story behind Norden+. Thanks Richard. Those readers who have been with us since 1.1 know that we also have a tournament in progress called "The Greatest Baseball Team of All Time (GBTOAT). Readers are encouraged to send in the results of their tournaments, which will be published in our May-June issue. If you do not have CGW 1.1.and 2.1, but are interested in the tournament send $1.00 for reprints of articles that list the eight teams and ground rules of the tournament. You need SSI's Computer Baseball or AH's Major League Baseball (modification needed on MLBB) to play the tournament. No awards on this tournament; just the opportunity to publish your replay results.

HOBBY AND INDUSTRY NEWS

Automated Simulations has announced plans to offer its **EPYX** and **MIND TOYS** products for the IBM personal computer. The award winning **TEMPLE OF APSHAI** will be the first release (March).

Automated Simulation's **DRAGON'S EYE** is now available for the Atari 400 and 800 computers.

Computerware (1512 Encinatas Blvd., Encinitas CA 92024) has released two new games for the Radio Shack Color Computer, **MAZERACE** (board game on computer), and **STORM** (arcade game).

Avalon Hill's Jack Dott tells us that AH will be releasing 6 new arcade games in April for the Atari and Apple computers. Also, according to Dott, current projects at AH include **STOCKS & BONDS** and **MIDWAY CAMPAIGN** for the IBM personal computer, a naval game called **ALL HANDS ON DECK, RICHTHOFFEN'S WAR,** and **CLOSE ASSAULT** (Squad Leader type game). No firm dates are available for most of these.

In **MISSION ESCAPE's** rulebook, CE Software offered a prize to the first player to get through all ten levels of that game. Steven Allen, a resident of Iowa (CE's home state) won the prize. Don Brown of CE states that the offer has been extended. Another prize of 5 CE Software products will be offered to the first player outside Iowa to win the game. To check on the current status of the contest contact CE Software at 515-224-1995.

Volumes 6 and 7 of the Swordthrust series, entitled "The Eternal Curse" and "The Hall of Alchemy" will be out very soon according to CE Software.

Synergistic Software announces its new game **APVENTURE TO ATLANTIS.** A to A, a sequel to their popular **ODYSSEY** adventure game, is an adventure game with embedded arcade action (Apple 48K, $40). Synergistic also plans two March releases, **NIGHTMARE GALLERY** (arcade with supernatural creatures) and **U-BOAT COMMAND** (action/strategy).

INITIAL COMMENTS

In addition to games mentioned elsewhere in this issue the following games have been received by CGW. Most but not all of these games will receive more detailed attention in future issues.

Cavalier Computer
P.O. Box 2032
Del Mar, CA 92014

THE ASTEROID FIELD: Cavalier's version of the **ASTEROIDS** arcade game. An excellent translation of the popular arcade game to the Apple II computer ($24.95).

STAR THIEF: Arcade game in which the player (or players) take the role of guards. In your spaceship you guard against the theft of the powerpods, Apple II 48K, $29.95 .

Automated Simulations
1988 Leghorn Street
Mountain View, CA 94043

TEMPLE OF APSHAI: Award winning hi-res fantasy adventure game.

UPPER REACHES OF APSHAI: Four new levels and 150 new rooms to add on to **TEMPLE.**

HELLFIRE WARRIOR: Sequel to **TEMPLE.** Four levels, sixty rooms, new commands.

THE KEYS OF ACHERON: An expansion dungeon for **HELLFIRE.**

RICOCHET: Abstract strategy-action game in which you maneuver blocks to set up a shot at your opponent's goal and try to protect your own. (Atari 400/800, TRS-80, Apple II: $19.95)

JABBERTALKY: A programmable word game. Four different programs are included, Alphagrammer, Cryptogrammer, Jabbergrammer, and Free Verse. (Apple II & TRS-80).

BEZ
4790 Irvine Blvd. Suite 108B
Irvine, CA 92714

BEZ-MX: Strategy/arcade game in which two players, or player and computer plan and execute attacks on each other's country. Weaponry includes MX missles and Bez-1 bombers. Targets are airfield, MX sites, factory, cities, agriculture (Apple II, $29.95)

LETTERS

Dear Editor,

I enjoyed reading Chris Crawford's view of the future of computer wargaming in the November issue of Computer Gaming World. This is not necessarily because I agree with his vision, but because Chris tries to deal with most of the important issues facing computer wargaming. In fact, I disagree with many of Chris' contentions and will discuss this under the two broad categories of programmers and hardware.

In general Chris seems to be quite displeased with the quality of programmers currently writing wargame software. As an example he states that he had not yet met a programmer who had "solved the mathematics of a hex grid for computer use". This is totally untrue, for he has met several programmers who have written games for SSI and all of them have solved the hex grid on the computer. In fact 8 of our 17 games use a hex grid and they were programmed by four different individuals.

Chris also stated that almost all computer wargame designers are amateurs. If he intended this to mean that they are all designing for the love of wargaming and not for money I would be forced to admit that this is at least partially true. But I get the impression his meaning is that most designers lack professional skills. Once again I must disagree. Would he call Charlie Merrow (designer of Computer Air Combat) an amateur when he has over 22 years of commercial programming experience on over 15 different computers. He may never have designed a board wargame before, but he's been working on computer games for a long time. This kind of experience has been more often than not the norm, at least concerning the designers that I have worked with.

As for pay, I agree that paying someone what he is worth is very important if you're going to get a quality product produced. As for SSI, our staff programmers receive wages and benefits that are very competitive with those received by programmers in industry (quite a feat considering that we are located in Silicon Valley). As for royalties, Chris paints a dim picture for the part time game designer. Actually, a designer stands to make between $10,000 and $20,000 from a game,

half of which he will probably see within six months after the release of his game. I feel that this is ample incentive for a programmer to commit his spare time for 4 months to a year (especially if he considers the project "fun" for at least the first few months).

So, as for programmers I must dispute Chris's claim that there aren't enough good programmers to write good wargames. I have dealt with many good programmers writing wargames, and although I look forward to working with more in the future (and there certainly will be more) the programmers we have now provide a great deal of creative talent.

As for the computers themselves, Computer Gaming World should have mentioned that Chris is an employee of Atari and thus presents his view of the world from a somewhat distorted vantage point. I do not agree that the Atari is clearly the better computer available today for computer wargaming. The graphics used in Southern Command on the Apple stack up against the graphics of any computer wargame available today. As for the disk I/O, the Apple has the clear advantage, operating at speeds up to 10 times that of the Atari. This difference is especially important when one is trying to design a complex game that will maintain a gamer's interest during repeated plays.

Being able to chain programs is essential, and the Atari is currently clearly inferior. Also, an Atari disk can hold only 75% of the information stored on an Apple disk, forcing simplification. I have no doubt that as the Atari comes of age it will have the potential of becoming a better machine for wargaming, but at this time I feel that the Apple is at least equal to the Atari, if not considerably better.

As for the statement that 16K games are good enough I must once again disagree. My work at SSI allows me to talk with computer wargamers everyday, and the general consensus seems to be that no 16K game to date (yes Chris this includes Eastern Front) maintains a gamer's interest past the first few games. I attribute this to the lack of variability in 16K games. With only 16K a designer must constantly simplify his game, taking away options until the game generally follows the same course every time it is played with little chance for a gamer to encounter dramatically different situations. On the other hand a 48K game can allow for different scenarios, more random events, and most importantly, more rules which cause each game to be considerably different from the last one played. Keeping a 16K game from falling into a rut is in my opinion almost impossible, and if the people I have talked to are any indication, I am constantly being proven right.

As you have probably determined by now, I disagree strongly with Chris on many issues concerning computer wargaming, but I do agree with him that computer wargames will continually improve, and that the machines we are currently using will eventually be replaced by newer, more powerful machines, and I for one can't wait to get my hands on one.

Joel Billings
Strategic Simulations

Dear Editor,

I was grateful to see a magazine devoted to the aspect of personal computing I am most interested in — game simulation (particularly sports games).

Unfortunately, my home computer, the TRS-80 Color Computer, has no Avalon Hill/SSI type software. The only obvious solution was to write my own — in particular a baseball and football replay program. Instead of a batter-by-batter simulation, it matches statistics for an entire team to determine the winner of each game. This allows replay of a complete 8-10 team league in less than 30 minutes, including entry of the team data.

With my game I replayed every major league season 1901-1976. Using each year's winner, I organized them into 10-year groups for each league. I played each of these groups through a 162/154 game season and these are the decade champions:

National League:

1906 Cubs	1942 Cardinals
1920 Giants	1952 Dodgers
1928 Cards	1963 Giants
1935 Giants	1973 Reds

American League:

1910 Athletics	1948 Indians
1917 White Sox	1957 Yankees
1927 Yankees	1968 Tigers
1937 Yankees	1969 Orioles

Then I normalized the statistics for each league's...winners (compared them all statistically to the same year — 1940 — then altered the actual team data to get an accurate replay of teams 67 years apart...like the 1906 Cubs and the 1973 Reds).

I replayed these 8 team decade winners through a complete 154 game season with these results:

National League

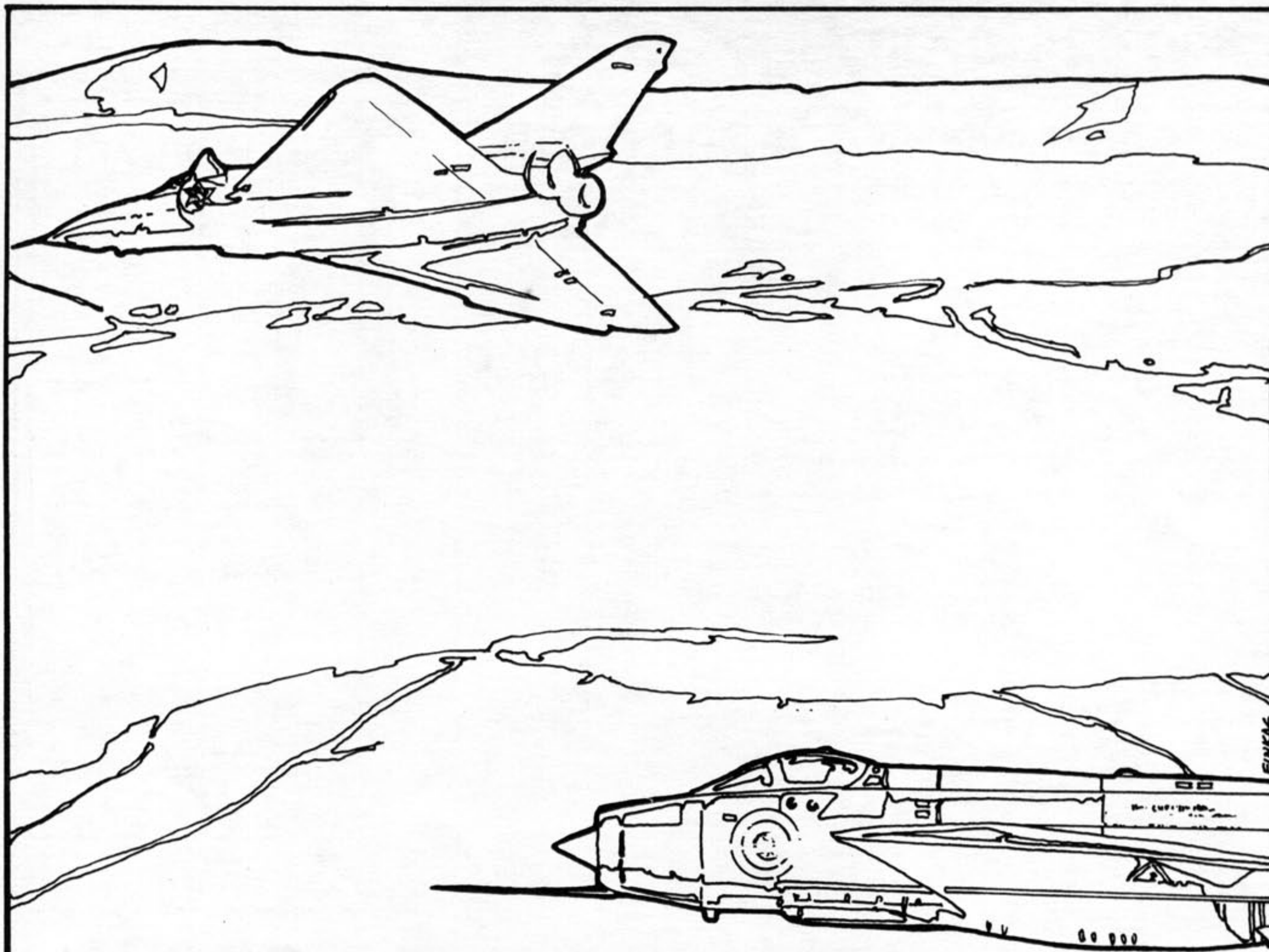
1906 Cubs	88-66
1973 Reds	83-71
1952 Dodgers	78-76
1963 Giants	77-77
1935 Giants	76-78
1942 Cards	74-80
1928 Cards	71-83
1920 Giants	69-85

American League

1948 Indians	87-65
1969 Orioles	87-67
1927 Yankees	83-71
1937 Yankees	80-74
1957 Yankees	76-78
1917 White Sox	73-81
1910 Athletics	66-88
1968 Tigers	62-92

I used the 1906 Cubs and the 1948 Indians for a 7-game "Super Series" and the Cubs won in 4 straight! I thought you might be interested in this different approach to determine "Baseball's Greatest Team".

L.V. Beatty
Norfork, VA



SOUTHERN COMMAND

By
Bob Proctor

BASIC INFORMATION

NAME:	Southern Command
TYPE:	Wargame
SYSTEM:	Apple II with Applesoft or Apple II Plus 48K
FORMAT:	Diskette
# PLAYERS:	1 or 2
AUTHOR:	Roger Keating
PRICE:	$39.95
PUBLISHER:	Strategic Simulations 465 Fairchild Dr. Suite 108 Mountain View, CA 94043 (415) 964-1353

Recent issues of computer magazines such as BYTE and CREATIVE COMPUTING have been been filled with praise for, of all things, a wargame called **EASTERN FRONT.** The large map, the ease of play, and the skill and speed with which the computer plays make the game a new standard against which others will be judged. If you're an Apple owner, however, you're probably a little envious that the game is only available for Atari computers. You can relax now; Strategic Simulations Inc. has introduced **SOUTHERN COMMAND** for the Apple II (with 48K) and it is as good a game as **EASTERN FRONT!**

There are more simularities than differences between the two. **EASTERN FRONT** is better in some respects — for example, the ability of the computer to plan moves while it's waiting for you — and **SOUTHERN COMMAND** is better in others. For instance, it has a strategic map which lets you view the entire map (EF does not) and it has a **Save Game** feature which any game that

takes 2 hours or more should have (again, EF does not). There's no need to say more, those who own Ataris will buy one while Apple-owners will buy the other.

HISTORICAL BACKGROUND

SOUTHERN COMMAND portrays 3 days of fighting between the Israelis and Egyptians during the Yom Kippur War of 1973. The war began on October 6th when Syria attacked the Golan Heights in the north and Egypt attacked in the south. The Egyptian forces crossed the Suez Canal into the Sinai (which Israel had captured in 1967) and broke through the lightly-manned Israeli defenses. Then, for reasons still unexplained, they stopped. This gave Israel time to defeat the Syrians in the north and transfer the units there back to their Southern Command.

Even with one front cleared up, Israel could not afford to sit passively on defense. Roughly 10% of their total population had been mobilized and these people were all needed back at the farms and factories where they worked. Israeli leaders had to find a way to end the war in a few weeks or the country's economy would collapse.

They decided to counter-attack at a weak point in the Egyptian line and cross the canal. By threatening Cairo, they hoped to force the Egyptian units to pull back on defense, allowing Israel to re-establish a defensive line along the canal. This plan, called Operation Gazelle, worked. **SOUTHERN COMMAND** gives you a chance to replay the initial stages of the Israeli counter-attack.

GETTING STARTED

The game may be played by two people but the emphasis seems to be more on solitaire play. With just one person, the computer always plays the Egyptian side. The Israeli objective is twofold: to get units onto the west bank of the canal and to reduce the number of enemy units on the east bank. Victory is determined by a complex point system but this is all handled by the computer. You may, at any point during the game, ask for a recap of the scoring and this includes an estimate of the final outcome (nice touch!).

When you boot the game disk, you see a menu which gives you 3 basic choices: start a new game, continue one that had been saved, or play a demonstration game. Demonstration mode is a marketing tool; something you'd use to show off the program in a store. Besides the number of players, there are several options to choose from when starting a new game. There are normally 20 turns in the game but you can choose to play 10 instead. The Israelis get 100 points to make up for the 10 missing turns. Also, the game normally starts with all forces in their actual historical positions, but there is an option to let the Egyptian move all non-infantry units to be in a better position. This option gives the Israelis a 20 point bonus and can be used with either the 10 or 20 turn game. When playing solitaire, there are 2 levels of difficulty and each may be played with or without hidden units, giving 4 variations of computer skill in all.



GRAPHICS

SOUTHERN COMMAND uses high-resolution full-color graphics to display the map and units. The map uses the hexagonal grid seen in most board wargames and compared with these, it's an average-sized map. It's 28 by 39 hexes but in normal mode you can only see an 8 x 13 "window" so it seems much larger than it is. You can move the window around with scrolling commands or by moving a cursor using 6 directional keys. The cursor is used to select any one hex; as it nears the edge of the map window, the window will move with it.

The various kinds of terrain are distinguished mostly by color: blue for water, green for forest, orange for light and heavy rough, white for sand and blank for clear. The pattern of dots which mark the terrain is distinctive, though, and you can quickly learn to recognize them in black and

white; thus, there is absolutely no problem playing the game on a monochrome monitor. The "B" key is designed to make colored terrain show up better by changing it all to white. This might be useful if it weren't for one error. The unit currently being moved normally blinks to help you keep track of it, and this blinking stops if you hit "B". I found this to be a big nuisance, but fortunately, the game looks better in color mode no matter what kind of monitor you have so just ignore "B". In color, the blinking unit flashes white, or green or orange so it stands out against any terrain (nice touch!).

The units are represented by symbols which remind you what type of unit it is . Thus, a soldier with a rifle is an infantry battalion, motorized infantry is represented by an armored personnel carrier (APC), self-propelled guns are clearly different from tanks, and artillery, rocket, anti-aircraft and recon units have their own symbols. Two units may be "stacked" in a hex and when this happens an "S" is displayed there. You can examine the stack by moving the cursor there. Egyptian stacks have a box around the "S" to distinguish them from Israeli stacks.

There are times during any game when you'd like to be able to see the Big Picture and **SOUTHERN COMMAND** lets you. A touch of the "P" key will display the strategic map. This is the entire map, and while it is too small to show unit types, the positions of all Israeli units are clearly marked by a solid square and Egyptians by a hollow square. Major terrain types are shown (again, readable in either color or monochrome) but roads are not. This map requires quite a bit of knowledge to interpret. You must know the map and remember what kind of units are where to use it well. Beginners may find it confusing, and the fact that the picture of it on the rear of the game box is upside down won't help! Still, it is an invaluable feature. Using it, for example I was able to learn that Egyptian units were behind me on the second day. From then on I paid more attention to the reinforcement schedule!

COMBAT

Combat is based on a step-reduction system, where units lose combat factors in action and regain them when they have a chance to "reorganize." If a unit's combat strength is reduced to zero, it is eliminated. The number of factors lost in combat will depend on the relative strengths of the units, the type of units, and on the situation. For example, bombarding an enemy with artillery before you attack will tend to increase his casualties and decrease yours. Or, if you can attack an enemy unit which is trying to reorganize, it will be less able to defend itself. The combat system is explained in an appendix in the rule book. A look at it will tell you such things as: tanks are the best units for attacking other tanks and motorized infantry but the Israelis can get into real trouble trying to use tanks to knock out Egyptian infantry. Of course, you could learn this lesson on the battlefield, too!

Much of the game's tactics involves choosing the proper mode for each unit. Attack mode is the best for combat, although Defensive mode is much better against artillery or air attack. River mode (for crossing the canal) is particularly weak, with Reorganization mode and Transportation mode only slightly better. Each mode has its use, however; it's up to you to learn the proper time and place for it.

Besides being rated for combat strength and movement, each unit is rated for efficiency. Efficiency affects how well the combat strength may actually be used in combat, how well the unit can change from one mode to another, and how quickly it can rebuild once it is pulled from the lines and put in Reorg mode. It is in the area of efficiency, and only here, that the Israelis have a clear superiority. The Israeli commander who can find the right time and place to rest and refit depleted units will greatly increase his effective strength. The computer, as an opponent, is particularly vicious about attacking these units with

artillery and they are very susceptable to this form of attack while in Reorg mode.

THE PLAY

In regular play, you have complete control over the cursor and may move your units in any order you wish. Once you start to move a unit, however, you must complete it. Just move the cursor to the unit you want to move, hit "M", and then use the direction keys to move the unit. It will stop moving when it's movement allowance is reached, or you may hit "Q" to end before then.

A very good feature, which speeds play quite a bit, is the "auto-move" mode. This simply means that after you finish moving a unit, the computer will automatically move the cursor to the closest unit which has not yet moved. If it happens to pick one which you don't want to move yet, the "L" key will cause it to skip to the next and come back to that unit later. It is smart enough to select your artillery units first so you can use them to soften up this turn's targets. Auto-move can be turned off and on at any time. Another nice touch.

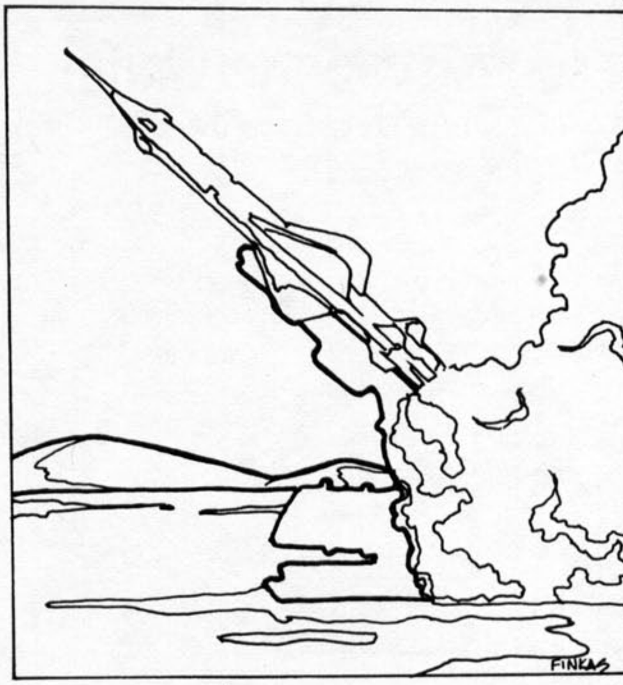
Another innovation in **SOUTHERN COMMAND** is *delayed orders!* Instead of moving a unit, you give it orders to move and attack (attack only for artillery) a given hex **IF** an enemy unit moves into it. I confess I haven't really mastered this yet, but the computer uses it if you play the most difficult level and it has caught me in several nasty ambushes.

The computer plays faster than any other SSI game I've seen. It is almost too fast to follow — and would be if it didn't pause to let you read the combat results. Of course, if you like, you can turn this pausing off so that it will finish its entire move in 15 or 20 seconds.

STRATEGY

There really isn't much choice about where the Israelis will cross the canal. The Suez runs from the lower left to the upper right of the map, but the right half is dominated by the Great Bitter Lake which cannot be crossed. Most units can cross wherever the canal is narrow, but Israeli tanks need a pontoon bridge. There is a group of Engineers who can build one and their slow progress toward a crossing sight is the focus of attention on the first day.

The easiest place to clear a corridor for them is in the center, right along the shore of the lake. Here, only one Egyptian infantry unit must be pushed back to open the way. Of course, this leaves a rather narrow, vulnerable supply line and creates a logical target for a counter-attack. The difficult level strategy seems to be characterized by just such an attack, delivered with a vengeance!



The Israelis must get units across the canal — 3 by turn 3, 7 units by turn 9, 11 units by turn 15 — so a few units must use their advantage of surprise on turn one to run past the Egyptians and cross the canal. Once over, they can stake out a bridgehead and maybe wipe out some anti-aircraft missle sites. These are worth extra victory points as an incentive for the Israelis to do something on the west bank besides camp. In fact, a powerful threat will force the Egyptian to pull units back from the east side, giving evidence that the game is successful as a simulation.

I haven't mentioned airpower yet. Airstrikes act just like very powerful artillery barrages. The Israeli Air Force can give ground support within certain limits. It may be called in at most, one on the first day, twice on the second, and three times on the third. You may not get that many strikes, however, as there is a random element at work. Also, once during the game the Egyptian Air Force may be ordered into the air and they will disrupt (prevent) an Israeli strike if one is called in that turn.

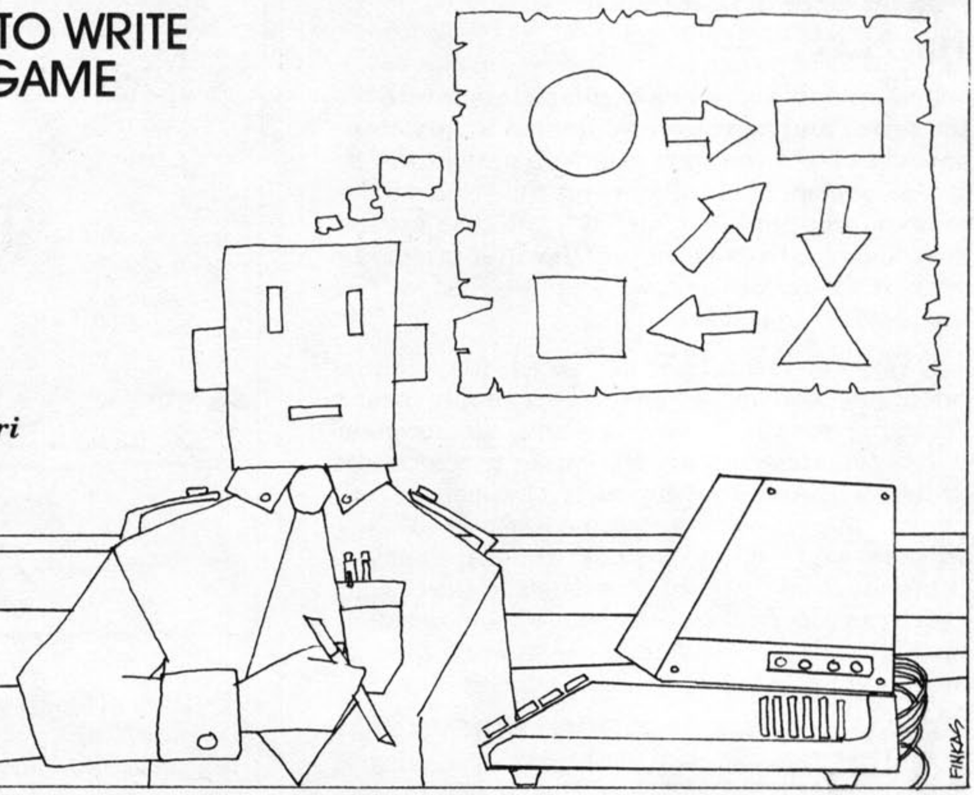
CONCLUSIONS

SOUTHERN COMMAND is an outstanding game and a very realistic historical simulation. The rule book and two reference cards are of SSI's usual (high) quality. The only thing I could want would be an option to play the Egyptian side solitaire, but programming the computer to play the Israelis would not be a trivial task. Still, it will keep me busy trying to crack that Egyptian defense at the highest difficulty level. I urge you to try it too.

SO YOU WANT TO WRITE A COMPUTER GAME

by Chris Crawford

Chris Crawford is an employee of Atari



You've had your computer for some time now. You've used it to teach yourself how to program and to handle a few household problems. You've also used it to play games. You have noticed that many of the games available for your computer are less than perfect. Soon you begin finding the technical flaws in them, and modifying some of them. The day inevitably comes when you decide that you could have done a better job than the designer. You tell yourself 'Maybe I should write a computer game.'

There's certainly plenty of motivation to write a computer game. Perhaps you have heard stories of the fabulous wealth awaiting the designer of a successful game. Perhaps you have read magazine articles about those wild and glamorous fellows who design the games. Or perhaps you are motivated by the simple pleasure of making people happy with your own creativity.

Whatever your reasons you are certainly not alone. More than a million people own personal computers. All over the country, thousands and thousands of people are coming to the same conclusions that you have come to. There is nothing stopping anybody from doing it; you need no special training to design a game, nor any special equipment other than your personal computer. No investment of money is required, nor will you need other people to help you with the programming. You can do it all by yourself in your spare time. It should be easy! Why then, when so many people want to, have so few people been successful designing games? There are four main reasons.

First, the successful game designers work very hard at their games. They are perfectionists who spare no effort in the quest for excellence. They have an eye for detail, putting in fine points that few customers notice. They polish their programs endlessly, rooting out all the bugs to achieve a flawless product. I know a software evaluator, a man of deep insight, who tells me that he can always tell top-notch software submissions from their user manuals; they are always carefully typed and free of spelling errors. Inevitably, the software accompanying such manuals is equally flawless. I have seen many games by amateur designers, some good and some bad, and the only common trait of the bad games was insufficient effort. There is no excuse for a half-finished game.

The second distinguishing trait of successful game designers is their technical expertise. They all are completely comfortable with assembly language and they all know their machines well. No great paintings were ever painted with crayons; no great symphonies were ever composed with kazoos; do you really think that you can write a great program in BASIC? I have yet to see an excellent program written in BASIC. I have yet to meet a good game designer who did not have total mastery of the machine on which he worked.

Technical expertise is a means to an end, but technical expertise alone does not qualify anyone to write good games. I know a number of brilliant programmers who have written wretched games. The best game designers are really artists at heart. Their games are an extension of their personalities. These people are intensely creative because they invest so much of themselves into the design process. They disdain copying other people's ideas, for that would detract from the clarity of their self-expression. My advice to the beginning game designer is similar to the advice a famous writer once gave an aspiring young author: Write a game about what you know, not what you think other people admire — this is the third factor in successful game design. If all you know is ditch-digging, then design a game about ditch-digging. If you put your heart and soul into it, if you condense the human essence of ditch-digging into that game, people will like it. If you only copy an idea somebody else has already used, people will see it for the cheap copy it is.

The fourth factor in success with games is marketing. Don't try to sell the game yourself; turn it over to a software house for royalties. If you are truly a good programmer then you are almost certainly a poor businessman. Let a good businessman handle the business aspects of the job.

There is, unfortunately, an element of luck in the marketing sector. Three years ago I pounded the pavement trying to sell my games to any of a number of software houses. Nobody was interested. Now I have standing offers from a dozen houses. I haven't changed that much in three years; what has changed is my reputation. Three years ago I was just another unknown software author. Fame and reputation — these things can be arbitrary. Be patient and make sure your product is good. Keep pounding the pavement and your turn will come.

If you decide to go ahead and write that game, I suggest that you follow these steps:

First, toss the idea around in your head for at least a month before you begin any programming work. Think it through first! Don't rush in and hack the program together. Make sure you know what you are trying to accomplish before you begin work. Ask yourself, what will people feel as they play my game? What will the game teach them? How will it challenge them?

Second, plan the game I/O before anything else. I/O is the big bottleneck in all games; it dictates what can and cannot be done. Graphics are assuming increasing importance in all games. Carefully plan the graphics and animation that your program will use. Pay special attention to the input structure of your program. Most poor programs suffer badly from poor input structures that confuse and frustrate the user. Don't let your game be ruined by clumsy or overly delicate input systems.

Third, lay out a memory map and stick to it. Decide how much memory your game will take. Less memory may reach a larger audience, but more memory will allow a better game. Allocate specific chunks of memory for specific functions. If any function needs more space, re-evaluate your entire memory map before allocating additional space to the function.

Fourth, develop the algorithms for critical functions of the game. Algorithms are the critical intermediate step between broad goals and specific code. Many beginning programmers leap all too quickly from concept directly into code without taking the time to properly frame their algorithms. If you think that you can write code without thinking out the algorithms behind it then you are either a great deal smarter or a great deal dumber than I.

Fifth, write the program. Are you surprised that writing the program comes so late? Are you surprised that I treat it so perfunctorily? If so, you are in for many more surprises when you do the game, all of them rude.

Sixth, playtest the game several hundred or even a thousand times. Enlist the aid of several friends to playtest it for you, and pay attention to their criticisms. Some of their criticisms will be bad; ignore those. Some will be good; implement them immediately and thank your lucky stars for good playtesters. How do you know the difference between good criticisms and bad ones? I don't know; if you ever find out, please tell me.

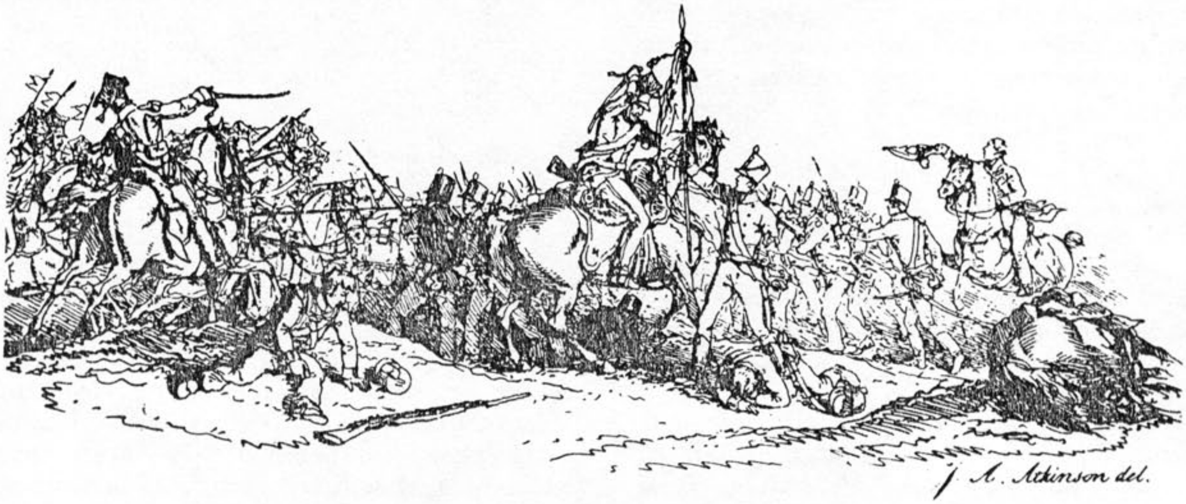
Seventh, polish the game.

Eighth, polish it some more.

And finally, when you are truly and deeply sick of the game and desperate to get it out of your hair, polish it for at least another month. Polish is the critical element, the final touch that turns a good game into a shining beauty. I have programmed four computer games now; every single one gives me pangs of guilt because I did not polish it adequately. Don't repeat my mistakes.

Obviously, the process of designing and developing a computer game is a long and painful one. Now do you see why so few game designers are successful?

NAPOLEON'S CAMPAIGNS 1813 & 1815: Some Notes



by Joel Billings

For years player's, designer's and strategy notes have been a standard feature of wargames. Sometimes the notes appear in the rulebook itself othertimes the notes are published elsewhere. Joel Billings, of Strategic Simulations, shares his notes on SSI's new game, ***NAPOLEON'S CAMPAIGNS 1813 & 1815.*** *The numbers indicate the section of the rulebook to which the note relates. Here's to better campaigning!*

PLAYER'S NOTES

3.1 Setting your Line of Communications can be crucial early in the game, for your corps will try to retreat along the com line if possible. In this way you can ensure that your corps that are far from the main army will retreat towards the bulk of your forces. An example of this is stretching your com line to the Allied 6th corps in Waterloo through hexes 8,9 and 3,12. This will allow 6th corps to retreat towards Brussels in the face of a major French attack through Tournai. The com line can also be used to create forces, thus allowing you to specify the march mode of the corps involved.

This is the best and only way of guaranteeing that your troops will get to where you want them to go. If for example as Napoleon you wish to pursue the southern strategy in Leipzig, a good tactic is to trace your com line from Leipzig to 9,12 - 9,11 - 10,10 - 9,9 - 8,9 - 10,8 - 10,4. This will allow you to give force orders to 9 of your corps on turn 1, and will allow a quick movement of troops from 10,4 to 9,12. In this way you will have direct control over whether your army force marches to a possible battle south of Leipzig, or takes its time in order to arrive fully rested.

3.4 and **3.5** The starting urgency and contact mode can mean the difference between life and death for a corps cut off from the main army. Giving an urgency of 9 and a contact mode of stand to the Allied 1st corps in Waterloo is equivalent to signing its death certificate. The same could also be said for the Allied 1st and 2nd corps in Leipzig. Be very careful to keep your corps out of a major battle until your army has been united. Also, beware of the sucker strategy often used against the Allied 2nd corps in Waterloo. If this corps is placed in initiative or attack mode, all the French player need do is send a cavalry corps to hex 16,15 followed two turns later by 50,000 men and suddenly the 2nd corps will find itself about to be destroyed. Although there is no best initial set up, especially in Waterloo, at least be cognizant of the tactics you are set up to defeat, and those which may be used to defeat you.

7.2 By moving your HQ as part of a force, you will be able to keep that force stacked together as long

as desired. This will allow for rapid movement. Without your HQ, your units will spread out along the road, with the last unit moving only after the first units have vacated the hex, thus slowing the inevitable desired concentration of your corps.

7.4 In effect this means that units in a ZOC may stack as much as desired. This allows you to concentrate your troops adjacent to the enemy and then attack with your entire force hitting the enemy at one time. In order to do this, give your units stand orders, and only convert to attack orders after your army has concentrated.

8.0 (A) Movement is by far the most subtle element to this game, and the part which gives gamers the most problems. If your units fail to move as you thought they should check for the following:

1) Is it or has it been raining?
2) Did you give a low urgency (don't expect a leader to burn rubber if he has an urgency of 1, in fact be happy if he moves more than once a day)?
3) Is the corps commander unaggressive (giving an urgency of 5 to Bernadotte is not much better than giving an urgency of 1 to Napoleon, and giving an urgency of 1 to Bernadotte will put him to sleep for the rest of the game)?
4) Is the unit trying to cross a river?
5) Does the unit have stand or initiative orders while constantly bumping into enemy units?
6) Is it night or 0500 in Leipzig?
7) Did you really give him orders to go somewhere?
8) Are you constantly sending him new orders each turn thus eliminating the old order?
9) Did you initially give him an urgency of 1 with his movement orders, and then send him a new order to convert to urgency 9, and was that the only order you sent him? Don't forget that a unit will lose all previous orders whenever he receives a new non-immediate order. This is the most common mistake made by players. Whenever you send a new non-immediate order, even one as simple as increasing a corps' urgency, remember to also reiterate the movement orders you wish the corps to execute.

8.0 (B) Another problem many people face is having their corps suddenly start to march off in an unexpected direction. The usual reason for this is that a unit moved somewhere due to combat (attacking or withdrawing). Units in combat keep their old orders (including orders previously issued during combat having to do with combat). When the unit is no longer facing an enemy it reverts to these old orders. Example: A unit had started to retreat to 3,4. The player gives an RT order for 3,5. When the unit finishes retreating to 3,5 it will move to 3,4. Use the SC command to check if this is happening, and if your unit has 'bad' orders clear them with a non-immediate order.

9.6.1 Ferocity is the key to combat in this game. A good leader can hold off a poor leader despite being outnumbered by as much as 10 to 1 simply by keeping the ferocity low. Rear guards and blocking forces should be given urgency 1 in order to prevent the high percentage casualties required to be routed. A player should only use a high urgency in combat when he is willing to accept large losses, or when he outnumbers the enemy sufficiently to reduce his losses.

9.6.1.2 Be sure to place your fatigued corps in the rear during a battle, for putting them in the front will only decrease your odds while increasing the chance that the units will rout.

11.5 The loss of a fatigue point from normal marching at night is often an exceptable penalty in exchange for speed. The ability to move at night should be used especially in Leipzig, due to the 0500 restriction on movement (the fatigue gained at night will be lost during the 0500 turn). Avoid force marching at night if at all possible.

13.2.7 For those who desire to get a corps to force march, simply begin a movement order with a starting hex that is several hexes away from the current location of the corps you wish to move. For example, in Leipzig, if you wish a unit in 9,12 to move quickly to 9,15, enter a movement order with 9,15 as the starting hex (and ending hex by pressing the space bar). The unit will force march until it reaches 9,15. This can be a very useful technique when used in movement along a straight line for short distances. If, however, the path is not straight, your corps may end up traversing open ground and crossing unbridged rivers while also force marching at night, thus destroying the unit's effectiveness.

14.3 The importance of this section cannot be overstated. It is essential that players realize that when a force is given orders to move at a set march rate, the march rate is only used during the turn in which the order was given. In order to keep a force moving at a set march rate, the player must continue to create the force each turn. In doing this without giving further orders to the corps, a player can ensure that his corps will move as he wishes them to.

STRATEGY NOTES

Leipzig (French)

The key to French strategy is to develop an initial plan involving the destruction of a major portion of the Allied forces before the Allied armies are able to unite. Once the plan is decided upon stick to

it, unless the Allied forces you hoped to destroy have withdrawn in the face of your initial thrust. Be sure to mask your true intentions as long as possible. The game can be divided into two fronts, the northern front facing Bernadotte and Blucher, and the southern front facing Schwarzenberg. Generally it is best to pick one and force march as many corps as possible to mass for an attack on the enemy forces in the front chosen. Leave only a small rearguard to block the movements of the other Allied armies, but be sure to leave at least one strong leader (6 or Napoleon) with the rearguard. If it becomes impossible to destroy the force you are attacking before other Allied armies begin to surround you (blocking your retreat routes to the west), pick a new com line and escape before your retreat becomes a rout. The French can win by causing heavy Allied losses during the first three days and then withdrawing the army to the west intact.

Leipzig (Allied)

Withdraw I and II corps toward Altenburg, standing only after being united with Schwarzenberg in hex 9,15. Use III and VII corps to disrupt French movements west of Leipzig, or move III corps to join the Allied corps in 9,15. Give high urgencies (over 6) to corps VI and VIII and order them to march towards Schwarzenberg. The key to the Allied plan is the ordering of IX and X corps. If you believe the French will attack south, order Blucher towards Leipzig, but with a low urgency and stand or initiative orders until you receive details of enemy movements near Leipzig. If you believe that the French will strike north, leave Blucher in Halle with stand or withdraw orders, and move Bernadotte to Halle as quickly as possible. As soon as you feel you know where the French are going, begin to attack his rearguard while trying to attrition Napoleon in the area of his attack (but don't allow your corps to be sufficiently fatigued to rout). On the last two or three days your objectives are clear, 1) take Leipzig 2) block the French withdrawal (this can be done if you are able to guess his planned retreat route early in the game). The VII corps is ideally suited for disrupting a retreat from Leipzig.

Waterloo (French)

Your only hope is to either crush the Prussian army and take Liege, or attack Wellington before he has time to concentrate more than three corps. In either case a holding force must be used to block a union of all Allied corps. Cavalry corps should be used to screen French movements and to disrupt Allied communications. They can also be used to block Allied movements (II and VI corps are the easiest blocked) and to capture Ghent, Liege, and Brussels if they are ungarisoned. The French player must keep his main force together and move quickly until a decisive battle can be forced on a portion of the Allied Army.

Waterloo (Allied)

The Allied player should concentrate corps 1-4 in Namur (alternatively, leave IV corps in Liege to guard your communications) and once there begin a move toward Waterloo if the French player is attacking Wellington. Concentrate corps 5-8 and Wellington near 11,11 and fall back towards Brussels if pressed early by the main French army. If the French attack towards Namur, march to Ligny and further once your corps have united. It may be necessary to leave VIII corps behind to secure Brussels and your communications line from French cavalry raids. Avoid force marching if at all possible, for your units have extremely low morale and can be easily routed in combat. The key is to withdraw early in the game, only accepting combat when your forces have united. Also, do not allow your Prussians to be attacked by Napoleon for long, for your leadership disadvantage will lead to the destruction of your army.

DESIGNER'S NOTES

7.0 It was decided that normally a corps would occupy an entire hex of roadway while it was moving, thus prohibiting others from moving through the hex at the same time. The exceptions to this involved either the concentration or withdrawal of an army in the face of the enemy, or the use of the army headquarters (logistics staff) to assist the movement of an army more quickly than otherwise possible (allowing stacked movement).

8.9 Orders to corps were usually vague, designed often to be interpreted by the corps commander as he saw fit. This is why we developed the idea of an order consisting of a stated path of movement and an urgency setting concerning the importance (and thus necessary speed) of the movement. The urgency is also affected by the aggressiveness of the commander, accounting for the historical tendencies of the commander's interpretation of his orders. The affects of urgency on movement and combat are the core of the game.

9.6 The key to the combat system is understanding our desire to enable an excellent leader with a small force to hold off a poor leader with a large force. The intent was to allow a well led French corps to hold for at least one day against a force many times its size, and this is why casualties are directly proportional to the urgency, allowing a good leader to lower the combat urgency and thus sustain relatively light casualties despite being outnumbered. Also, a good leader can force a

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SO YOU WANT TO WIN A MILLION?

by Richard McGrath

BASIC INFORMATION

NAME:	Blackjack Master
TYPE:	Card Game and Tutor
SYSTEM:	TRS-80 Mod. I, Level II, 16K
FORMAT:	Tape
# PLAYERS:	1
AUTHOR:	Norman J. Wazaney Jr.
PRICE:	$29.95
PUBLISHER:	Hayden Book Co. 50 Essex St. Rochelle Park, NJ 07662

Calmly, you watch as the dealer flips cards to each player around the table. Your table-limit bets of $500 have attracted the attention of several casino regulars, and a small ring of admirers has gathered behind you. You detect a faint scent of flowers as a soft hand gently touches your shoulder.

The dealer displays a nine of spades as he begins his circle of the table. The three players to your right each draw cards. Each, in turn, silently pushes his hand and his bet to the dealer when his total exceeds the conclusive 21 points. You carefully tilt the corners of your cards upward; just enough to glimpse the two red eights hiding beneath. With just a moment's thought, you flip them over and slowly push an additional $500 to the edge of the green felt. The hand on your shoulder squeezes gently.

The first card slides across the table and you quickly lift its edge. Another eight, this time black; not what you expected. Without hesitation, you turn it over and move another $500 stack out from your depleting bankroll. The hand on your shoulder tightens perceptibly. Another card leaves the dealer's fingers. Closer to the statistical probabilities this time: A red king to go with the first eight. Quickly, your finger taps the second eight. It is hit with a black seven. Again, not what you expected. You make a quick decision, calling for another card. This time you get a five, for a total of 20 on that hand. Moving quickly to your final eight, you motion for one more card. This time the expected probabilities come through: a queen.... of hearts.

Now the dealer glances toward the tight lipped pit boss as he turns over the card hiding beneath his black nine. The crowd gasps as it becomes visible: the final eight in the deck, giving the dealer a total of 17.

You breath an audible sigh as you accept the pit supervisor's chit for $1,500.00 and turn to look directly into the smiling blue eyes behind you.

If this is your fantasy of a weekend in Las Vegas, then maybe **BLACKJACK MASTER** can help make that fantasy come true. It gives the blackjack devotee a way of testing new playing strategies and betting systems without risking the proverbial farm. The program consists of three parts: The GAME; the SIMULATOR; and the TUTOR.

The GAME is similar to other blackjack programs. It plays blackjack with the player, offering all of the options available in a standard casino game, including doubling, splitting cards, insurance, and that little known possibility — surrendering. Bets can be made in any amount from $2.00 to $500.00, so money management strategies can also be analyzed.

I have two immediate objections to the game program. First, the game always starts you with an unrealistic (for me, anyway) bankroll of $100,000. I would quickly alter the program logic to either provide a less intimidating amount or allow the player to choose his own bankroll. I'm not comfortable risking $100,000, and, at a maximum bet of only $500, it just takes too long to feel that you're either winning big or really blowing the wad.

The second objection is more serious. The graphics of the game are dull and uninspired. Even with the somewhat limited capabilities of the TRS-80, a graphic representation of playing cards is possible. To limit the depiction of a playing card to a small number crammed into a box detracts from the visual impact of the game. Additionally, the screen text format requires the player's eyes to jump between several points on the screen; increasing the likelihood of player fatigue and mistake. Possibly the 16K memory limit prevented the use of graphic playing cards due to program size. But, even staying within

these limits, I believe that a better screen layout is possible which would improve the visual appeal of the game.

One technical hitch was discovered. After running through a few hands in the GAME program, I was pulled up short by an "out of string space" error. I corrected the problem by increasing the cleared space from 800 to 2,000 in line 20 of the program. This worked in my 48K machine but may not satisfy other models. I suggest you play around with this if it occures in your version.

The TUTOR portion of the program is probably the most useful of the three segments for the average player. It continuously deals cards to you and to the dealer and asks for your play on each hand: hit, stand, double, or split. It then immediately analyzes the correctness of your play based on the playing strategy imbedded in its program logic (more on that later). If you are wrong, it displays the proper play for the hand. At the end of any number of hands selected by the player, the TUTOR provides a total statistical analysis of your play; presenting percentages of correct and incorrect calls when hitting, standing, doubling and splitting. Thus, the player learns which of his decisions are weakest and can concentrate attention on improving those segments of his play.

The only real objection I find in this part of the program, is that the player decision is analyzed on only the first two cards dealt in each hand. Obviously, if I'm dealt a 4 and a 3, I'll call for another card, no matter what the dealer is showing. But, what if the third card dealt to me then is a 9, giving me a total of 16. Should I hit or stand? That's a far more important (and realistic) decision, but the TUTOR doesn't contain the logic to help with that one.

One other minor objection is the use of the numeral one to represent aces in both the GAME and the TUTOR portions of the program. It sometimes caused me to input wrong decisions due simply to confusion.

The final, and most unique, part of the program is the SIMULATOR, which is designed to run through any selected number of hands using the playing and betting strategy chosen by the player. It then displays a complete analysis of the strategy; including the total number of hands won and lost, the number of busts for both the dealer and player, and the number of blackjacks, splits, doubles and pushes. All in all, a rather impressive performance. Unfortunately, the program can analyze only about 50 hands a minute, while the instructions indicate that about 5,000 hands should be processed for a statistically valid result, so be prepared for a long wait.

Two other improvements can be suggested for the strategy simulation program. First, it analyzes only zero-memory strategies. That is, strategies that do not make use of any memorization of previously played cards. Experienced blackjack players, who utilize different betting and playing strategies based on what cards are remaining in the deck, may find this too limiting. Another limitation is imposed by its use of only one deck of cards. Many casinos use a shoe containing three or four decks at a time, and, in fact, the GAME portion of the program uses four decks. This can change the strategies somewhat from single deck play.

Now for the major criticisms. Two problems stand out as almost intolerable in this otherwise acceptable program: the documentation and the method of inputting the player's selected strategy for analysis.

First, the documentation. The instruction booklet is an impressive 60 pages in length with a slick cover and quality art work. Of interest to the neophyte programmer is a complete flow chart, a listing of program logic and a list of all variables used in the program.

The weakness is found in the complexity of preparing the tables necessary for inputting the player's selected strategy. After carefully explaining how the game is played in terms suitable for rank beginners, the instructions continue on into statements like: "for every entry next to the ace on the worksheet, put an X in the ace row on the double down table-hard form under the two card total slot". Now that's a mouthful, and enough to confuse and discourage all but the most determined blackjack players.

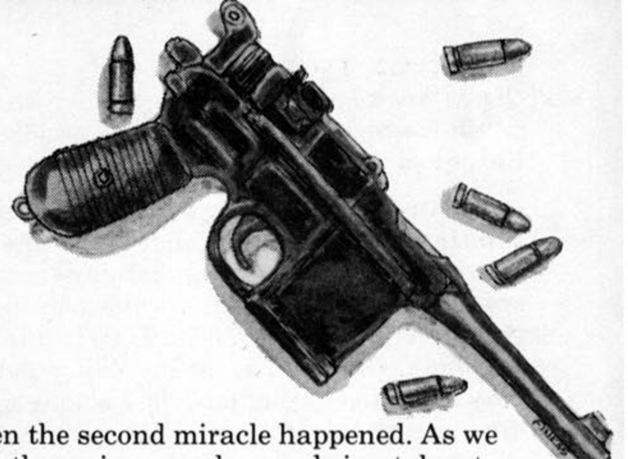
The second major difficulty is in the method of inputting player strategy. After using the confusing tables described above to diagram a strategy, it must be input into program logic by listing out the program and then inserting data statements containing strings of 1's and 0's at the proper points in the program structure. In addition, if a player desires to save a particular strategy for future use, it must be separated from the rest of the program, saved to disk in ASCII format and then re-entered into the main program through the use of the merge command. Certainly not a job for the typical non-programmer blackjack player.

If this explanation of the strategy input method left you confused, then perhaps blackjack master isn't for you. But if you're a reasonably capable programmer and an avid blackjack player, then this program may be your guidebook on the road to riches.

Fiction:

ESCAPE FROM WOLFENSTEIN

by Ed Curtis



There it is...Switzerland! Just fifty more yards to the frontier and those dogs can howl all they want after that. Those miserable dogs! I haven't had a wink of sleep in the past four days because of those DOGS!! Hold it... Get hold of your self! Don't let those moon-cast shadows get the better of you. Of **you**? Now I'm talking to myself. That last grenade must have shook me up more than I thought. That last grenade. It seems like a lifetime ago that I got out of the Castle. How long ago was it? Lets see...the Schweinfurt raid was on the seventeenth, August seventeenth. Only last Tuseday. Just hit the ball-bearing plant on the swing back from the fighter factory, and the rest was home free. That is until you lose your engines and half your crew to fighters that were supposedly drawn south with the other formation. And then, slowly drifting down as you watch your B-17 hit the ground in a ball of flame. I was sure that they were going to shoot me until one of the officers recognized that I was a bombadier. All that I remember after that was one word which kept reoccuring in their conversation--**Wolfenstein.**

Time seems to lose much of its meaning as the preliminary interrogation took place. "Tell us about the Norden bombsight and how it works!" "Don't be a fool, captain, you know that you will tell us everything before long." "Why make yourself suffer needlessly?" "Your fellow officers have already given us the information we need; all we ask of you is enough information to check what they have given for minor errors which may have occured due to their conditions at the time." On and on, over and over with what appeared to be random interruptions. It got to the point that I wasn't sure anymore about my ability to hold out, when it happened.

That night, a British commando, little more than a pile of rags after what he had gone through, slowly pushed a pistol, that he had somehow gotten, over in my direction. He knew that he was through, he insisted, and told me of the plans for an **Operation Rheingold.** I now had a duel mission; to keep my information from the Germans, and getting the plans out. More importantly, I now had the means to do at least the first half!

I was being taken to the interrogation rooms again when the second miracle happened. As we passed another prisoner, who was being taken to the holding cells, my guard's attention was off me long enough for the pistol to do its work. The other prisoner, hit by a stray bullet, at first seemed dead. I don't know what made me check his body, but turning him over brought a small gasp from the otherwise lifeless corps. Coming slowly to conciousness, he held on, somehow, long enough to give me a possible escape route.

From that point my escape became one battle after another, as I slowly worked my way down the building. Off the bodies of the common soldiers I scavenged bullets and grenades that cleared my way room by room. The chests that I opened helped even more as they provided me with a uniform, food, and other very useful items. Protected by a bullet-proof vest and in German uniform, my only bane proved to be the equally protected and unrelenting SS. I don't know how many times I ran from one room to the safety of another only to be pursued by those devils. Fanatical, they would walk right into a stream of bullets, trusting their vests and Adolf Hitler to protect them.

Throw a grenade and duck around the corner. Before I got out of that death-trap, I had developed that response to anything...throw and duck. That, I'm sure, is why my head feels like something that was borrowed from some poor relation. And, that last one! If miracles come in threes, then that must surely have been the third. I'm still certain that I was closer to it, when it went off, than the SS officer.

I don't remember much of what happened the next day or two, but it seems that I just kept going away from the dogs. It is even possible that the Germans, by heading towards the border, kept me from wandering aimlessly until they picked me up. Even with the way that I feel, the thought of the Germans making my escape possible brings a grin.

Oh, well! I've rested enough, and the howling grows nearer. Time to check my pockets and go those last fifty yards. Lets see, wurst, schnaps, pistol, grenades, map, and...oh yes...the plan.

ODE TO JOY, PADDLE AND PORT:
Some Components for Game Playing

Luther Shaw

TG Products of Richardson Texas and The Keyboard Company of Garden Grove California are probably the best known manufacturers of game input devices for the Apple II computer. Both companies sell game paddles and joysticks. TG Products also sells a switchable game port.

In the year that I have owned my Apple II computer I have gone through two sets of the low quality black-cased paddles which, at that time, came with the Apple II computer. The dials for the old paddles were often short on the readings on the upper end. But the worst component of the old paddles was the fire button which was designed for light weight electronic duty, not the hot and heavy pounding that comes from constantly saving the earth from invading aliens and the like.

Happily TG Products and The Keyboard Company have made available game paddles that are far superior to the old ones. The TG paddles are encased in rectangular plastic cases color matched to the Apple. The fire button is large and of much better quality than the old black-cased buttons. The paddle dial control has a substantial feel. If you leave your ship/whatever exposed to enemy fire it will be your own fault not that of the TG paddle which retails for $39.95 per pair.

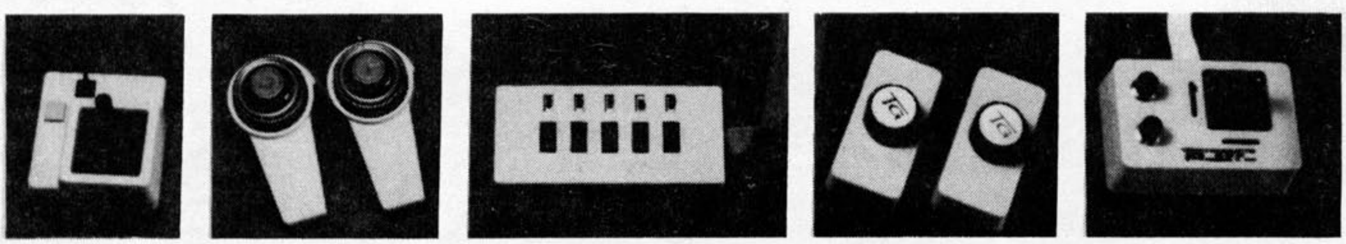
TKC's paddles are shaped to fit comfortably in your hands. The dial is designed to allow the player to use the paddle as a small dial device or a large dial device. It reminds one of the small steering wheels of the street racers versus the large steering wheels the cruisers used to have (does that date me?). The fire button is built flush against the case which makes it comfortable to use. It is apparent that TKC has put some thought into the human engineering of their paddles which retail for $29.95.

Like the TKC paddles, the TKC joystick fits comfortably in your hand. It is weighted which gives a high quality feel. The stick itself moves smoothly providing accurate response. Rather than the two fire buttons that you find on most joysticks, the TKC joystick has one fire and one dual action. switch. The dual action switch has a momentary ON position which automatically switches back OFF (for use as a regular fire button) and a permanent ON position (for continual firing). TKC added this dual switch with the view that players (as well as those using the device for non-gaming applications) would like the variety of the dual switch. It was also hoped that some games would be designed to make use of the feature. However, after using the dual switch I find that it doesn't add much and is more difficult to use than a second fire button. The Keyboard Company has been considering making the change back to a stick with two fire buttons. They want to know what the users think. If you have used TKC's joystick you might drop them a line letting them know what you think of their dual switch.

Like their paddles, The TG Products' joystick is encased in a durable plastic case color coded to match the Apple II. The device has an important feature lacking in the TKC stick — self centering. Certain computer games such as CASTLE WOLFENSTEIN and FLIGHT SIMULATOR play much better with a self-centering joystick. But if you prefer a non-self centering stick TG Products provides simple instructions on disabling the self-centering feature. The two fire buttons are just like those on their paddles and will stand up to a lot of punishment.

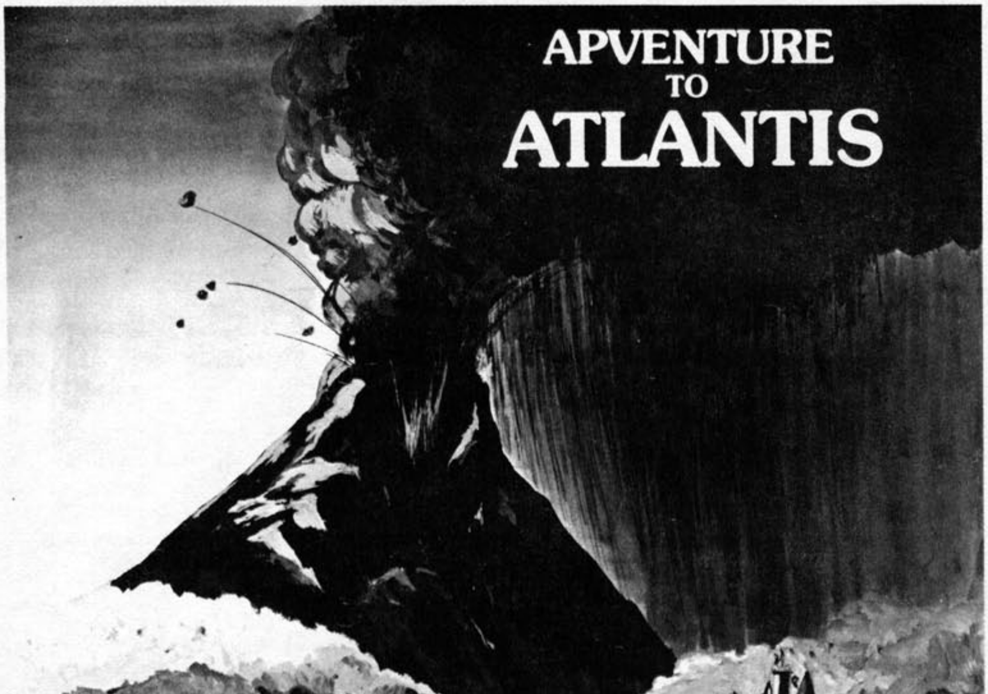
A third item marketed by TG Products is a must for any gamer who is tired of having to get inside his Apple II to manually switch from the paddle plug to the stick plug. Not only is manually switching a hastle, it can also get expensive if you do what I have done — break a pin in making the switch. SELECT-A-PORT sets outside your Apple II and provides switch selectable sockets for various game devices (such as paddles and joysticks). SELECT-A-PORT plugs directly into the game port and allows you to plug in up to five devices which would normally plug into the game port. Socket #1 is a non-switchable socket which directly parallels the game socket. It is utilized for sensitive devices for which diode isolation would interfere. Socket #2 is switch selectable and modifies the device plugged into it to operate as paddle 2 and paddle 3. This is useful in applications requiring dual joysticks or four game paddles. Sockets #3 through #5 are switch selectable ports which may be connected or disconnected to the Apple II via a switch. At $59.95 SELECT-A-PORT is not inexpensive, but is a worthwhile purchase for the serious gaming hobbist.

After having played games with both sets of paddles this writer finds both to be of high quality but prefers the TKC paddles due to physical design and the cost. The choice of which is the better joystick buy is more a question of taste. While the TKC stick is of costs less ($49.95 as opposed to the TG stick at $59.95), it lacks the self-centering feature. If self-centering is important to you then your choice is obvious.



From left to right: TKC joystick, TKC paddles, TG Select-a Port, TG paddles, TG joystick.

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THE CURRENT STATE OF COMPUTER GAME DOCUMENTATION

By Steve Rasnic Tem

Computer game players often give short shrift to game documentation. And why not? Too often it's a barrier the gamer has to overcome, every bit as difficult as the cleverest monster or the most ingenious trap. Instead of being perceived as an essential part of the game, the manual is seen as something between the gameplayer and the game, a necessary nuisance.

I know many computer gamers who glance at the documentation just enough to discover the basic keyboard commands, then throw it into the wastecan. I know gamers who copy their friends' game diskettes, but don't even bother to borrow or copy the manual. They know there will be commands that aren't in the documentation anyway. They know there will be situations, objects, special rules and conditions which the manufacturer hasn't even bothered to include in the manual, so usually they're content to just discover for themselves what the rules and limitations are. It has become a game within a game — *What was left out of the manual and where was it wrong?*

I'm not a programmer; I'm a fiction writer, writing computer manuals on the side. I do therefore have a bias — I want gameplayers to read manuals. But I don't **read** most of the manuals currently on the market as I have a rather low tolerance for boredom. Putting aside the issues of incompleteness and technical inaccuracies game manuals are usually lacking on the most basic level of writing — they fail to hold our interest.

Consider the example set by adventure game manuals. These are the worst offenders simply because they need to be longer and more detailed. Most of us can wade through the page or two the average arcade-type game requires. Adventure game manuals, on the otherhand, will typically begin with a lengthy description of its cast of characters. The thief, the fighter, the priest, the mage, etc. When have you ever been surprised by these character descriptions? When has there been a characteristic which stood out, which was unusual enough to mark that character as anything other than two-dimensional? Read a character description in one manual and you've read them all.

Next come the all-important Attributes. Strength, I.Q., Speed, Luck, and Constitution make up a typical list. Of course, these are merely words attached to the numbers in the program which enable the computer to simulate the variety of human types in the real world. The computer plays with these numbers to figure the outcome of battles, theft attempts, etc. But the gameplayer must think of these attributes as real human characteristics, strengths and shortcomings which make his characters individuals, before he can really enjoy playing the game. Far too often the documentation treats these attributes as if they were just numbers, providing only the most cursory examination of what these attributes mean. Often the definitions are fuzzy, overlap with each other, or at worst are just plain nonsensical. There would seem to be no compelling reason why a character might be stronger in one attribute than in another. Each should mean something different within the context of each character's life: added strength, for instance, will mean something different to the fighter than it does to the thief. And the case studies of the characters in the manual should ideally provide a

context which will make such differences apparent. A fighter might use added strength in swinging a mace; a thief might use it to scale a wall to reach a crown. But perhaps the fighter would not have the **motivation** to use his added strength in this manner, and would be unable to scale the wall. Of course, in some cases these differences will not be accounted for in the game system itself, but they can make a big difference in a player's feeling for the characters and the situation they are in. The game simulation will seem a bit more real.

But a manual which attempts to work out the questions of character and attributes more thoroughly and evocatively may provide an added bonus. Using the above example, the manual's fuller exploration of character might demonstrate to the designer that he should change the Strength formula in the program so that the fighter cannot use added strength to scale a wall. More complete documentation may suggest improvements to the way abstract numbers are handled, adding complexity and realism to the game.

Of course, most of these criticisms apply to the "simulation" part of the game. Gameplayers who couldn't care less about characters and the fantasized scenario, who are quite comfortable playing at a more abstract level in which these attributes and characters truly **are** numbers, will have no problem with second-rate game manuals. The manuals will be totally irrelevant to them beyond a few basic keyboard instructions.

As a science fiction and fantasy writer, the thing I'm most struck by when I read computer game manuals is the number of lost opportunities. Few manufacturers seem to have realized that manuals can be more than basic, skeletal instructions. They can be part of the fantasy world itself: a magic book, a historical treatise, perhaps a handbook for the sorceror's apprentice. A gateway to another world.

In my desk I have a handful of computer game manuals. Several of their makers seem to have discovered some of the potential for the game manual as an actual fantasy object.

A relatively straightforward treatment is the **Starship Mission Simulator Operator's Handbook** (Harry M. Sweeney, 1979), a manual for a number of the Trek-type games. It's a long manual, with much discussion of quasi-technical matters, game system material which might normally detract from the role-playing aspects of the game. But Sweeney treats this material as if this were an actual Federation manual for the Starship Mission Simulator. The reader becomes a cadet or highly trained and skilled Federation officer seeking to improve his or her skills. The cadet or officer will be rated; the simulator gives each mission a performance rating. The role-playing fantasy begins as soon as the gamer opens the manual. The documentation becomes a true fantasy object.

Similarly, Level-10's **Rings Of Saturn** manual takes the guise of briefing papers for a pilot employed by a corporation exploiting the mineral wealth of the Saturn system. The pilot has been ferrying tourists to view the splendor of Saturn's rings when a distress call comes in — a research ship has been disabled and is slowly drifting into the 'A' series of rings. After a short narrative placing the gameplayer into this physical and social setting, the rest of the manual briefs him on the capabilities of his craft and what dangers he might expect. The keyboard is treated in the manual as if it were an actual command center.

These two manuals represent a type of manual we're beginning to see more of from computer game manufacturers. The imaginative transformation of the manual is of the most elementary kind, but it can be quite effective in placing the gameplayer directly into the fantasy setting.

Strategic Simulations' manual for **Computer Ambush** does something effective with the problem of character sketches. Near the end of the manual the gameplayer will find two "soldier dossiers," one for the U.S. Army and one for the Wehrmacht. These dossiers contain profiles of soldiers in the squad, including facial sketches. The profiles are well-written, and most importantly give the gameplayer enough of the soldier's background (history, lifefstyle, hobbies, etc.) that their otherwise abstract attributes (Intelligence, Strength, Dexterity, etc.) take on specific meaning. These dossiers make the characters in **Computer Ambush** among the most real figures in computer gaming.

The rest of the **Computer Ambush** documentation, although very thorough, underscores the problems involved in writing a manual for a very complex game. As in many boardgame manuals, the long lists of rules, combat formulas, and special conditions make for very dull reading. And this is perhaps one reason wargame rules and procedures often require many playing hours to understand even at an elementary level. The solution is not easy to come by, but I would suggest that a collection of fake documents containing the rules in disguised form — such as "The Conduct Of War" by Baron Reich, "A Hand-to-Hand Combat Training Manual," or "A Handbook Of Codes Fro The French Campaign" — might prove to be part of the solution. Using the fake document format not only thrusts the gameplayer immediately into role-playing, but also produces a manual which is much more entertaining, and easier, to read.

Producing such a manual is not easy — when poorly executed such fake documents would tend to confuse more than clarify — but when well thought-out the results should be quite impressive.

One of the more impressive series of computer adventure manuals is **Dunjonquest** by Automated Simulations. These manuals include a basic introduction to role-playing for those unfamiliar with the phenomenon, a brief fictional narrative, descriptions of the monsters, and descriptions of the rooms and levels within the dungeons. Although simplistic in comparison to the highly descriptive Dungeons & Dragons manuals, these manuals encourage the gameplayer to visualize the fantasy setting to an extent not found previously in computer gaming. Where graphic limitations prevent the programmer from illustrating the scene, these short descriptions prod the gameplayer's imagination into making up the difference. The Dunjonquest manuals provide a happy medium between the highly descriptive and involved D & D manuals — which would be far too cumbersome for the average computer game — and simple, skeletal manuals which do not engage the player's imagination at all.

When I was asked to write some of the manuals for the Level-10 series of adventure games these questions were very much on my mind. The first two of these games, **Dragon Fire** (by Rodney Nelsen) and **Kaves Of Karkhan,** involve the same cast of characters. My goal for these two manuals was to produce "fantasy packages," which would encourage the gameplayer's role-playing abilities and use of imagination to a high degree.

The introduction of the **Dragon Fire** manual delves into the psychology of role-playing, encouraging the beginning player to enter the personna of one of the DF characters. This is followed by a full-length short story which brings the characters together and explores major aspects of this fantasy world. I felt that the brief narratives in other manuals, as rarely as they appear, have a number of limitations. There really isn't enough room to provide the specific detail, the gradation in mood, the "color" required to make a fantasy world come to life. The short story form can also show a lot more about character than the usually brief character descriptions. Motivations can be explored (an aspect lacking in many computer games). And of course in a short story you can build suspense, and involve the reader in the setting in ways not possible in a narrative fragment. What better way to enter a role-playing fantasy universe?

Both **Dragon Fire** and **Kaves** include character profiles and detailed character drawings. These profiles are meant to make the figures come alive, relating anecdotes concerning their lives before this particular adventure.

> Female warriors are not unheard of in these regions, but their homelands, their purposes, sometimes even their names, have remained secret. Three-finger John, the tavern owner, is convinced they hail from wandering "daughter bands" of amazons who kill their husbands. "They eat raw meat and drink the blood from dying animals," he tells his barmaid with a wink.
>
> Wizards are said to love disguises...Many has been the time he's dressed the part of the elm, the weeping maiden, the grass-covered hillock, or the deer in flight.
>
> You can't find an elf, no matter how hard you try. They will always find you. Elves are highly secretive creatures, vanishing here and reappearing there; they enjoy travel more than most anything.

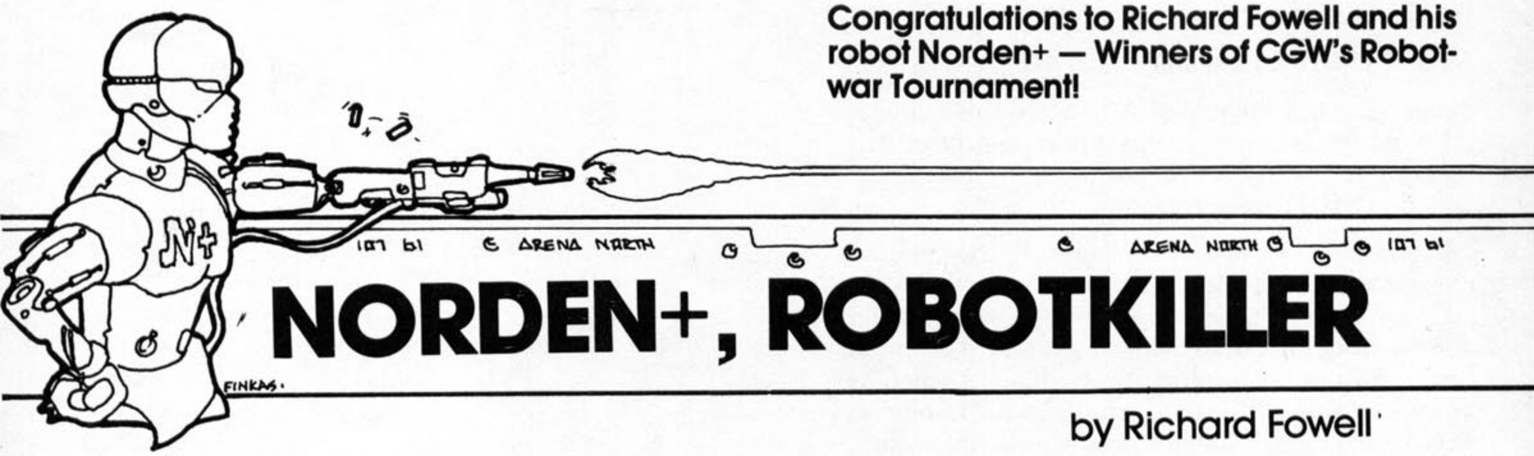
I also tried to bring some life to the usual stopping places of the adventurer on an important mission: the uniquitous weapons shop, armorers and tavern. I was tired of shops with no names, no propietors, and worst of all no visual picture which readily came to mind while the player was visiting there. At Winsome Willy's Weapons Shop: "Willy will go to any lengths to replenish his diverse stock, including raiding the bloody battlefields, ambushing unwary warriors, and has even stooped to grave robbing upon occasion. Please watch your head; hand axes, maces and battle axes are hung just above eye level." At Fliver's & Sons, Armorers: "There are no 'sons'; Fliver just likes the way it looks on the sign... Try not to stumble over the customers piled up outside the entrance."

Level-10's **Alkemstone** provided a different kind of challenge. This was essentially a puzzle game, the clues leading you to a real stone (a glass sphere) buried somewhere in the world, with a prize of $7,500 to the finder (unclaimed as of this writing). The task was to create a mythic history for the stone. So I tackled this project as I would any fiction assignment for **The Twilight Zone Magazine** or **Weird Tales,** attempting to create a mythic tale spanning centuries, involving "real" characters in conflict with such primeval forces as "The Spectral Serpent."

> A vast creature of stardust and moonshine...its disturbing and bizarre dreams are ultimately responsible for most of the races of people who live today. The sun lived within a small

Continued on page 39

Congratulations to Richard Fowell and his robot Norden+ — Winners of CGW's Robotwar Tournament!



NORDEN+, ROBOTKILLER

by Richard Fowell

ROBOTWAR is MUSE's game for the Apple computer, in which players write control programs for robot gladiators. At the UCLA Computer Club, fifteen members have been playing **ROBOTWAR** since the summer of 1981. As of January 1982, NORDEN+ is one of our top two robots . He is my eighth robot, and the fifth in my current series.

NORDEN+ was designed for multi-robot battles, where avoiding damage is more important than inflicting it. His intent is to let the others kill each other, then kill the weakened survivor. To avoid damage, he moves at top speed in both X and Y directions. This is fast enough that, even if a robot has him dead in his sights, NORDEN+ is usually gone by the time the shell gets there. Even robots with tracking algorithms, such as its arch-rival SCALE, have difficulty connecting. To date, firing blindly seems to hit him as often as anything.

NORDEN+ fights as well as he runs. His ability to hit targets while moving at full speed earned him the name of the famous World War II "Norden" bombsight. He scans to his right, and when he sees a target, he computes the angle to which he must swivel the gun so that the shell will hit, based on how far he will have moved between sighting and firing , and on the range to the target. He uses his knowledge of instruction execution time and a simple arctangent approximation. His offense if his weak point, but even in one-on-one combat, NORDEN**+** will beat any of the robots about nine times out of ten.

Another problem with movement is collisions. To avoid robots, NORDEN+ doesn't start moving until damaged, giving corner and edge robots time to leave the middle. Once moving, he stays away from edges to avoid such robots. After turning, he looks along his new path for robots, and turns if blocked. While waiting initially, he first checks the direction he intends to move, then does a simple rotary scan. If he spots a robot, he goes into a firing routine that includes a simple tracking algorithm. To avoid walls, NORDEN+ uses the information from his scan along his movement path and dead reckoning.

NORDEN+ has lots of room for improvement. Rather than detailing his specific implementation, I think it is more fruitful to mention some of the tools employed. Two primary design considerations are general strategy and the specifics of the robot simulator.

In strategy, it is important to concentrate on things that count. A robot that ignores damage while locked on to a robot in multiple combat is silly — the others will chew him up while he's distracted. In one-on-one, the reverse is probably the case. Spending a lot of trouble on improving NORDEN+ performance in his stationary state, where he spends littly time, is not as rewarding as improving his performance while moving, etc. All too often, designers spend a lot of space on features that are rarely exercised.

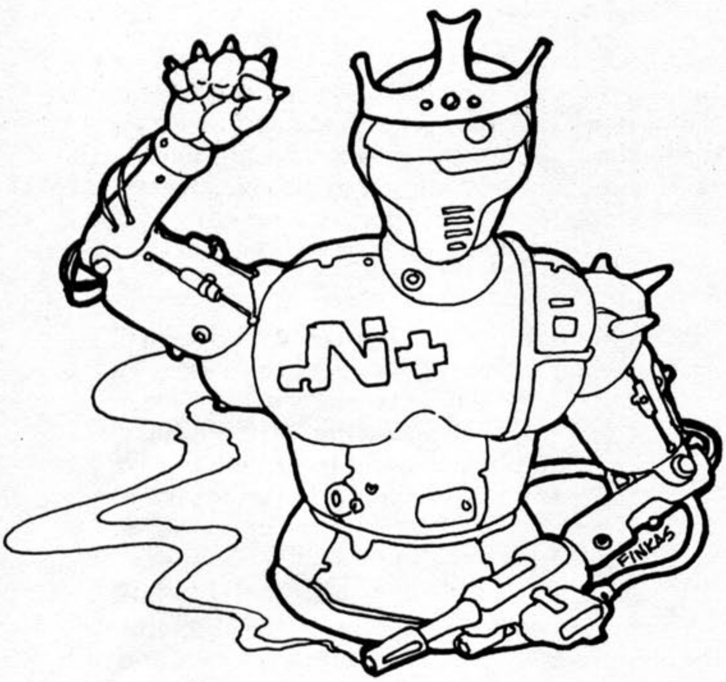
To implement things, it is frequently important to know precisely how a program will act. We have done considerable experimentation with test robots on the testbench and in the arena to learn these details. Here are some. The program seems to go to each robot in order, execute one "tic" of code, move the robot, resolve collisions, if any, then go to the next. A "tic" of code is one expensive instruction (a GOTO, GOSUB, or a reference, direct or indirect, to the "real" world, i.e. referencing AIM, SHOT, X, Y, etc.) or ten successive cheap (other) instructions referred to are the compiled or assembled instructions, which, by the way, make a perfectly valid source code. NORDEN+ takes full advantage of this by putting as many as nine cheap instructions before each expensive one, since such a group of instructions takes only one tic. Incidentally, the X distance moved by a robot in a tic is SPEEDX/50, and similarly for Y. For such things as dead reckoning and tracking algorithms this information is crucial. It also helps to know that the gun barrel cools in **9 tics.**

There are also some typical useful code sequences. If the gun barrel angle is stored in variable A, and the scan increment in B, the sequence

A + B TO AIM TO A TO RADAR 0 - RADAR 0 TO SHOT

is useful. Note the use of A to store the value of AIM, which is expensive to refer to, and that the test of RADAR leaves precisely the right value to be fed to SHOT in the accumulator.

If anyone has a robot that beats NORDEN+, the sample robots, and all other robots they have seen in one-on-one combat consistently (we typically use twenty-game matches as a standard) I would be interested in hearing from them. I may be contacted care of this magazine. If not, I hope that this article helps someone produce such a robot.



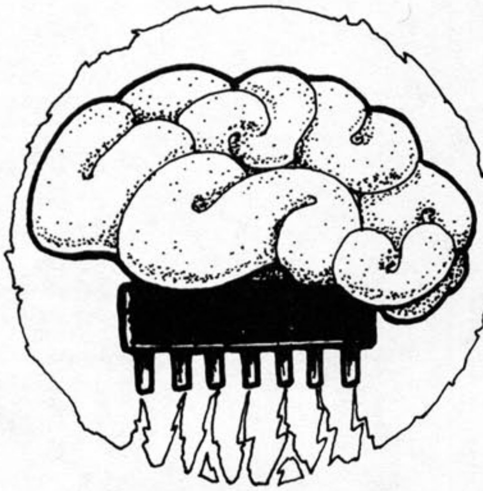

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;ROBOT "NORDEN+"

;BY RICHARD A. FOWELL

;WINNER OF COMPUTER
;GAMING WORLD'S
;ROBOTWAR TOURNAMENT


; ADROIT MOD
1 TO SPEEDY
256 TO U TO V
 315 TO Q
 100 TO D
  81 TO K
 Y > 128 -256 TO V
   >  -1  135 TO Q
  90 TO L
  99 TO M
  X > 128 -256 TO U
  U / V TO H < 0 90 + Q TO Q
  85 TO N
  95 TO O
  11 TO INDEX
  29 / 2 TO J
  1014 * 4 TO E
SCAN
  Q + T + B TO A TO AIM
  -58 TO B T + 13 TO T
  IF DAMAGE # D GOTO START
  A TO RADAR
  3 - RADAR TO R < 0 GOTO SCAN
                   TO SHOT
SIMPLE
  -2 TO F
  850 / R TO C
INAMIN
  A - C - C TO A
MORE
  DAMAGE # D GOTO START
  A + C TO A TO AIM TO RADAR
  1 + F TO F > 10 GOTO SCAN
  3 - RADAR TO R < 0 GOTO MORE
                 F < 0 GOTO INAMIN
                 R TO SHOT
  GOTO SIMPLE
START
  -500 TO F
  U TO SPEEDX
  V TO SPEEDY
  Q TO RADAR
  RADAR > 0 GOTO MAINP
TURN
  IF H > 0 - U TO SPEEDX
  IF H < 0 - V TO V
  V TO SPEEDY
  INDEX + 1 TO INDEX
  0 - H TO H
  90 + Q TO Q TO RADAR
  IF H < 0 - U TO U
  IF INDEX > 15 11 TO INDEX
  3 - RADAR TO F > 12 621 + 621
                       / F + Q TO AIM
                  > 12 F TO SHOT
                  > -137 GOTO TURN
MAINP
  -600 TO B
   TRACK TO C
   U TO SPEEDX
   F > -145 TURN TO C
  -500 TO F TO T TO D
   Q + DATA TO I
MAINQ
   T + 29 TO T > -77 GOTO TURN
   D > DAMAGE GOTO TURN
   T - 29 > B I TO A
   A TO RADAR
   T > -99 GOTO TURN < -450 766 TO Z
   3 - RADAR TO F
           < 3 + T > -296 GOTO TURN
           < 3 GOTO C
         T < B GOTO C
   Z / F + A TO AIM
   IF A = I E / F + A TO A
   F TO SHOT
   J + T TO T > -84 GOTO TURN + 50 TO B
   IF C < TRACK GOTO C
TRACK
   Q TO RADAR
   0 - RADAR > 0 GOTO TURN
                 TO T
   MAINQ TO C
   621 + 621 TO Z
   DAMAGE TO D
   GOTO MAINQ
```

A New Column . . .



THE SILICON CEREBRUM

by Bruce Webster

AN INTRODUCTION

Artificial intelligence, games, and computers have been linked together for, well, as long as computers have been around...longer, in fact, if you count the "chess automatons" (usually worked by a hidden person) of a few centuries ago. In 1950, only a few years after the advent of the digital computer, Claude Shannon published a paper in **Scientific American** describing an "automatic chess player". Since then, computer game playing has been a significant area of research in Artificial Intellegence (AI). Recently, much of that research has found commercial application in specialized units that play chess, backgammon, and reversi. It has been slower, however, in being applied to games for personal computers. There are at least two reasons, among others, for this. First, up until a year or so ago, most personal computers systems did not lend themselves to sophisticated software development. Second, there have not been that many articles on applying AI techniques to computer games (outside of alpha-beta/minimax techniques, which are not easily applicable to most of the comuter games out on the market). The first problem is taking care of itself, but what about the second one?

This column, hopefully, will help to take care of the second problem. Its purpose is to provide a forum for demonstrating useful AI techniques for computer games, with the emphasis on "useful". To do this, **Computer Gaming World** is going to need the help of those of you who are actually using such techniques in your games right now. If you are interested, you are invited to write me, c/o **CGW,** to get information on the format we want to follow in this column. If you don't feel that you can write the column yourself due to time or other constraints, you can submit your ideas and we'll write the column to present them. The goal is for the techniques to be understandable and applicable. When necessary and feasible, program outlines and short sections of code will be used.

Some of you may be wondering just what areas of artificial intelligence are applicable to gaming. The answer is; almost all of them. to give you an idea of some of the areas we're interested in and how they might apply to your programs, here's a partial list of topics with some ideas as to how they are used in games:

Making decisions. This is probably the "heart" of computer game playing: choosing the best move or action. It usually involves two separate problems: generating a set of legal moves, and deciding which one is best. The classic technique here is generating a game tree of alternating moves (so as to look several moves ahead) and using some sort of evaluation function and alpha-beta/minimax techniques to minimize how long you have to search to find the best path. Unfortunately, alpha-beta/minimax techniques don't work well in "real time" games or in games where a given side can move several or even dozens of pieces each game turn (e.g., your typical wargame). When you have lots of units to move, how do you decide where to move them all?

Defining and seeking goals. Typically, each player in a game has some goal or set of goals to accomplish. When there is a single goal (e.g., putting your opponent's king in checkmate), this isn't a problem. But what about when you have several goals to accomplish? How does the program decide which goal to pursue right now? In some games, only a few goals out of a given set need to be reached. How do you decide which goals are most feasible in a given situation? The program may also need to be able to break down a goal into a set of sub-goals, each of which is easily defined and accomplished. Finally, there are situations when a given goal is no longer worth the cost of

achieving it. How does the program recognize that, and how does it pick a new goal?

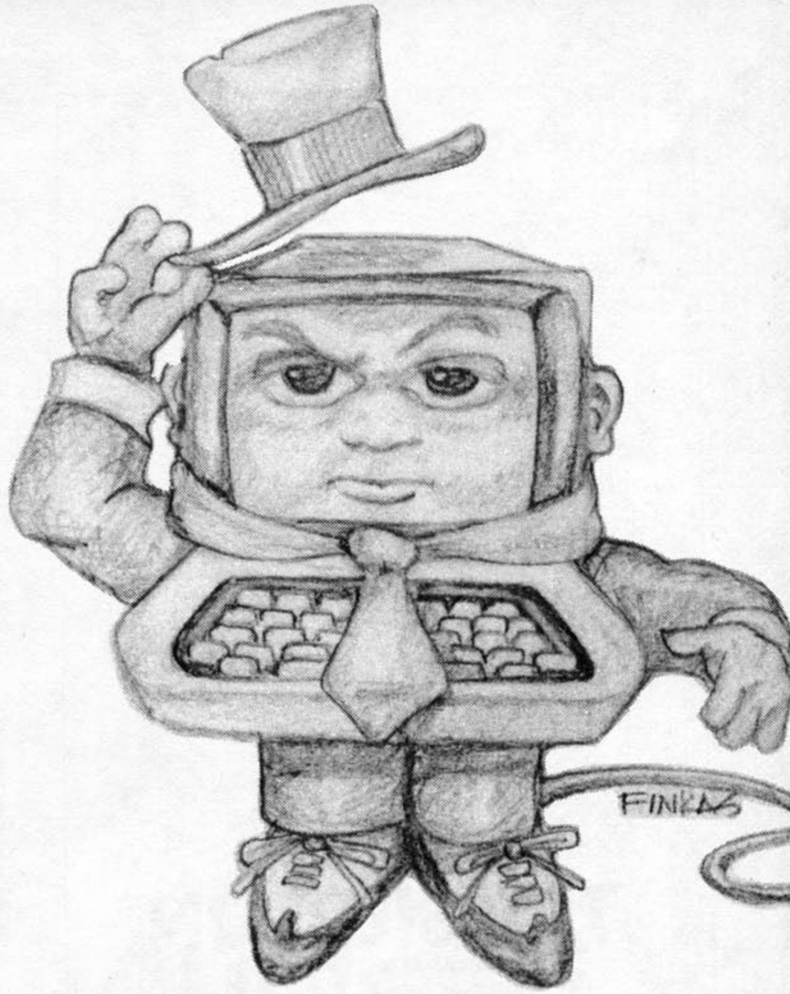
Representing the "world". A computer game is played within its own little "universe", which must somehow be represented inside the computer. Modelling a chess board and pieces is not a difficult task. Modelling a typical wargame map and all the attendant counters is another matter entirely. **Adventure** and all its many progeny have generated a lot of commercial work in knowledge representation; what are some of the cleaner and more powerful techniques in use now?

Talking with the player. This problem is twofold. First, the computer has to somehow convey the necessary information concerning the internal universe to the player. Second, it must understand his commands. Much of this area doesn't directly impinge on AI, but the **Adventure**-like games, with their command parsing, do. How do you let the player express commands in a powerful, straightforward manner?

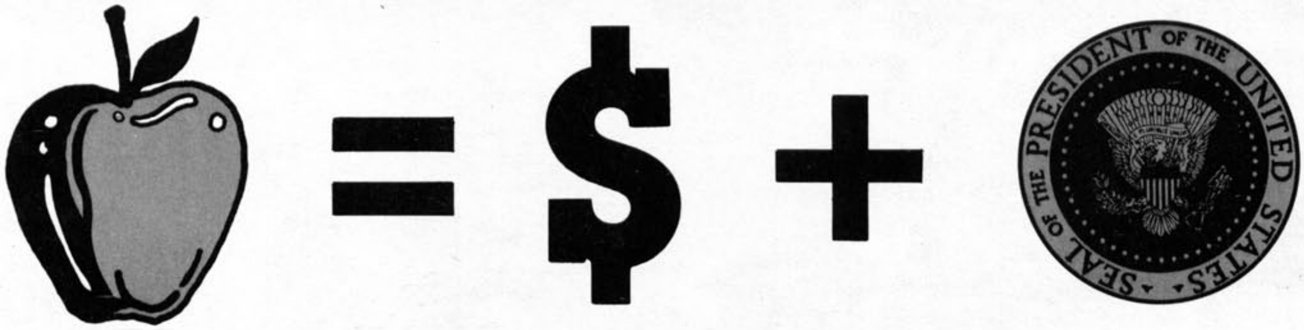
Learning. For most of us, the more we play a game, the better we get at it. This is **not** true of virtually all of the computer games on the market today (which may explain why so many of them become boring after a while). For any of you currently developing computer vs. player games, this would be a marvelous selling point: a game which gets better as you do. An added enhancement would be for the program to develop specific techniques for specific individuals (which would require the individual to enter his/her name before each game).

Recognizing patterns. The program needs to be able to interpret the game "universe" and recognize certain situations or patterns. This can range from something as "physical" as a certain configuration of pieces on the game board to something as abstract as certain game strategies. To do this, the program needs to extract certain features or characteristics from the appropriate data source and somehow decide what they mean. A computer playing **OGRE** might not have much trouble recognizing (and adjusting to) the four-howitzer defense, but can it pick out a pattern of hit-and-run attacks by GEV's (Ground Effects Vehical) and react accordingly?

As stated at the beginning, AI, games, and computers have somehow been always tied together, though usually just in research centers. With the rapidly expanding personal computer market, however, commercial applications abound. Hopefully, this column will help you, the game designers and developers to share your expertise and generate better, more intelligent, computer games.



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How can an Apple® possibly get you the two things in life you'd love to have — money and power? Only if it's equipped with our latest software, two strategy games so well designed they blur the distinction between make-believe and reality: CARTELS & CUTTHROATS™ and PRESIDENT ELECT.™

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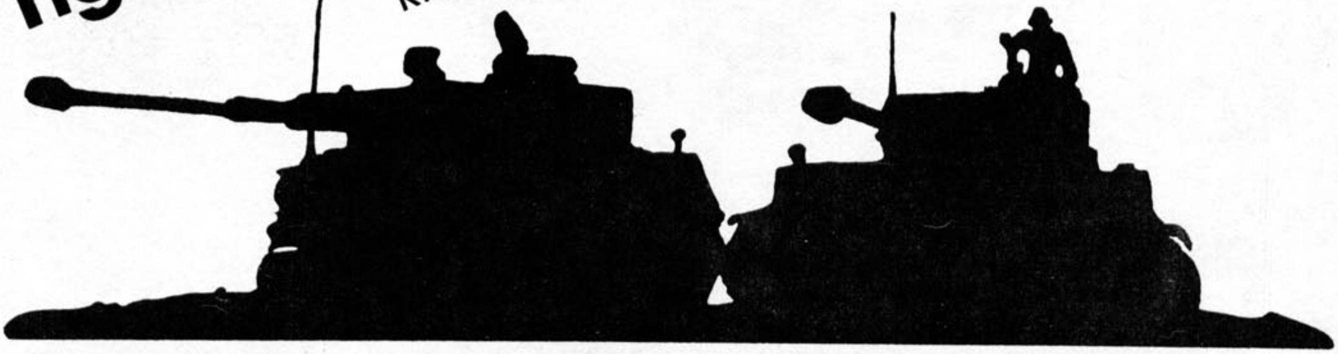
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STRATEGIC SIMULATIONS INC.

Tigers In The Snow: A Review

Richard Charles Karr



BASIC INFORMATION

NAME:	Tigers In The Snow
TYPE:	Wargame
SYSTEM:	Apple II & TRS-80
FORMAT:	Diskette "Apple"; Tape "TRS"
# PLAYERS:	1 or 2
AUTHOR:	Landrey, Kroegel, Walker
PRICE:	Apple ($39.95), TRS-80 ($24.95)
PUBLISHER:	Strategic Simulations 465 Fairchild Dr. Suite 106 Mountain Veiw CA 94043 (415) 964-1353

Few subjects in the history of board gaming compete with such ferocity for attention from traditional wargaming partisans as the German counteroffensive in the Ardennes of December 1944-January 1945. **Tigers In The Snow,** a recent release by Strategic Simulations, Inc., is another of the many attempts to confront the design problems inherent in attempting to simulate that campaign. **Tigers In The Snow** is a grand tactical first-time attempt by a software company to cover the Battle of the Bulge in a computer game format. With graphics and memory limitations inherent in a 48K Applesoft ROM or Apple+ version, its one-map solution presents some unique design innovations as well as pioneering pit falls.

The physical components are slick and professional. A thick 1" box (with splashy exterior graphics) comes with 4-page "case-organized" rules, color map display, and quick-start/order of appearance card.

THE GAME SYSTEM

A traditionally accepted sequence of play is presented: German movement; German attacks; Allied movement; Allied attacks; reinforcement appearance; victory status; and save game option. Units are called off for movement and combat in a once-through order, as it's not possible to move one unit out of the line and another unit back in its place (for the most part) on the same turn. During the combat segment, enemy units are listed that are adjacent to friendly units, and an option exists to attack or not attack. If an attack decision is made, four different levels of attack are offered: major; medium; light; and recon. Units debilitated by losses or combat state may shift down in method of attack (simulating possible decisions by local commanders). Combat resolution is done by the program, with results ranging from attrition and no advance or retreat to outright defender (or attacker) elimination, advance after combat (attacker only), and an option for a second combat.

Between each phase a summary of general supply, fuel, and artillery reserves is posted, along with a victory point total for each side. The save game option requires an initialized SSI disk.

One and two-player versions are offered at the outset, with the computer capable of taking either the Allied or German side in the one-player option. Computer strategy, as the Allied player, is typically one of straightening out the line, holding key points (victory conditions), and falling back. Computer strategy as, the German player, is one of pell-mell dashing for victory point locations; ignoring problems of flanks and fuel. It's quite possible, in the middle of the game, for individual German units to become isolated far ahead of the main advance, subject to ever-tightening fuel

resource shortages and the inevitable Allied 3 to 1 attacks by reinforcements. Unit losses are worth victory points on a 1 to 1 basis, with no bonuses for unit losses while isolated. Marche, Bastogne, Rochefort, and northern, southern, western, and eastern map edges are worth additional victory points.

Units cannot stack, move through each other, break down, or build up. Zones of control impede movement (ridged Z.O.C.), preventing retreats, and supply unless friendly units are in the enemy zones of control otherwise blocking supply. Units unable to retreat, when the combat results call for such, suffer additional losses. Each unit has a combat state, ranging from 0 to 7, which greatly affects combat resolution. **Combat state** changes if units move or just "stay put"; possibly showing the effects of movement on communications and unit cohesion. Combat results which allow an advance of three hexes permits the attacker the option of a second combat.

An average "computer as player" turn last 3-6 minutes, with player interaction necessary for defensive strategy and artillery allocation. While this 3-6 minute turn may seem long to some, it actually goes by fairly quickly since the human player is involved with each battle in terms of setting his defense and deciding whether or not to call for defensive artillery support.

THE GAME AS GAME

Options exist initially for players to choose strength levels for each side, numbered from 1 to 9. A historical mix should be 4 for the Allies and 5 for the Germans. With a "computer as German player" set-up, 7 or 8 for the Germans will allow for greater thrills, as the helpless Allied player watches the computer Germans blast through the thin American lines and surge towards the edge of the map to be hopefully repulsed by penny-packed reinforcements near the Meuse. With a "computer as Allied player" set-up, the Germans are still going to have a rough time of it, so a compensatory "play balance" rating of "6" for the Germans is appropriate.

The inability of units to attack, break down, or re-form into their parent units is as frustrating as the inability to move through each other. A more suitable approach would have been to allow units to move through each other (regiments and brigades only), with deleterious effects on movement capabilities and combat state as columns become snarled on the few roads available. Combined regiments should be allowed to re-form into divisions, again with the above effects. Other debilities in this system include the inability of theoretically mobile units (such as the hapless 14th Cavalry Regiment) to get out of the way if a clear path of retreat is present before combat, and the almost hypnotic predilection of German units to advance far ahead of supporting elements in a near-manic drive for the victory point hexes. An evil tactic for the Allied player is to allow one lone chewed-up German unit to "break out" and advance across the Meuse, to be later consumed by counterattacks from the thus-triggered British.

THE GAME AS HISTORY

One obvious element that is missing from **Tigers In The Snow** is the presentation of road nets. Certainly on the scale presented (10/15 km./hex) adequate road presentation is difficult at best, as several roads would course through many of the hexes. But leaving out the road nets causes the game to gloss over the problems that were so important in the Bulge campaign. Namely, that the extreme congestion of German columns, traffic and unit control created a situation in which small elements of American infantry (remnants of combat units mixed with support troops) were able to force powerful panzer and panzergrenadier elements to stop and deploy. This necessity of deployment clogged rear areas with tangled elements of mixed-up men and material. The result was that the German advance was often restricted to small scale actions between company and batallion sized formations.

The use of "combat states" is the answer given by the designers to the problem of road movement, deployment and attack. The higher a units combat state, the better prepared it is to attack or defend. Units go down in combat state as they move and go up as they remain stationary. While not a bad way to handle the problems of movement/deployment, this method still leaves untouched some important facts concerning the Bulge campaign. With roads not represented the importance of critical road junctions is only hinted at. Victory points are given for holding Marche and Bastonge but the important road junction of St. Vith is ignored.

CONCLUSIONS:

Despite the minor dissatisfaction over the road nets, **Tigers In The Snow** is enjoyable as a "situation in doubt" game, with the possibility of German break-outs threatening to roll up the American line. The tension of hoping your perfectly laid plans don't disentegrate in your face can keep you riveted in your seat for hours. Although the game is not as innovative as other SSI games it is a design which deserves attention as part of the improving integration of wargames and computer software.

YOU TOO CAN BE AN ACE!

Bob Proctor



BASIC INFORMATION	
NAME:	A2-FS1 Flight Simulator with British Air Ace
TYPE:	Arcade flight simulator
SYSTEM:	Apple II or TRS-80 16K
FORMAT:	Diskette or Tape
# PLAYERS:	1
AUTHOR:	Bruce A. Artwick
PRICE:	Tape $25; Apple Disk $33.50
PUBLISHER:	Sublogic Company 201 West Springfield Champaign, IL 61820 (217) 359-8482

Ground School For the Flight Simulator

The **A2-FS1 Flight Simulator** from Sublogic has been available for about a year now. Although there are other flight simulators, the Sublogic program remains unique for the built-in dogfight game. While raving about the simulation, reviewers have called the game "difficult", "challenging", and "next to impossible."

Difficult, you say? Maybe, but certainly not impossible. For those of you who have given up, or are about to, I would like to pass on the approach I used to score my first victories. I assume that you're already a reasonably competent Simulator pilot. By this, I mean that you can land safely but not necessarily on a runway!

The first step is to take off and fly due west (270 deg.) about 100 feet above the ground. To save time, I just ignore the runway; the plane is heading 270 to start with and you can take off and land ANYWHERE in the Simulator's world — I think it's a gigantic parking lot. The low elevation does two things: 1) it keeps enemy aircraft above the horizon where you can see them constantly and, 2) it prevents those same aircraft from diving under you and coming up on your tail.

The basic plan is to come in low and straight, shooting all of the enemy planes down while they are in front of you and before they can begin to play tricks. The differences in the 5 enemy pilots and planes will cause them to spread out as they come after you. You just point your plane directly at the nearest enemy and keep firing by pushing the space bar until the little dot disappears. You can get confirmation of your "kills" from the score

on the lower right corner of the instrument panel — 1 point for each plane shot down.

Let's return to the cockpit of our Camel, still heading 270 at about 500′ (ground level is 411′). No matter when you declare war (the "w" key), the enemy will not take off until you cross into his territory. The further you are from his airbase at that time, the longer it will take the fastest fighter to reach you and the more scattered the enemy will be. This is what we want, nobody that I know of can tangle with all 5 at once and survive. Our only hope is to take them on one or two at a time.

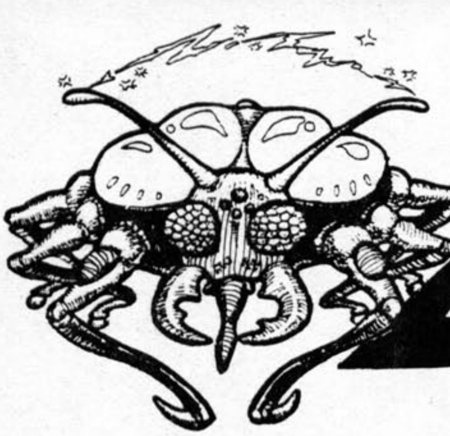
As you cross into enemy territory, then, you should be close to the north edge (the mountains). Flying due west from the British airdrome will put you far enough north for this strategy to work, but you can go further north if you find yourself needing more time. In fact, you can fly right THROUGH the mountains and go several miles further north!

At this point, I usually switch from the 3-D view to the downward view. The latter acts the same as radar but has greater range to the sides. You can "see" the enemy coming from the south (left) and turn to meet them sooner. As soon as the first one shows up on the "radar", switch back to the 3-D view as this is the only way you can see whether your target is higher or lower than you.

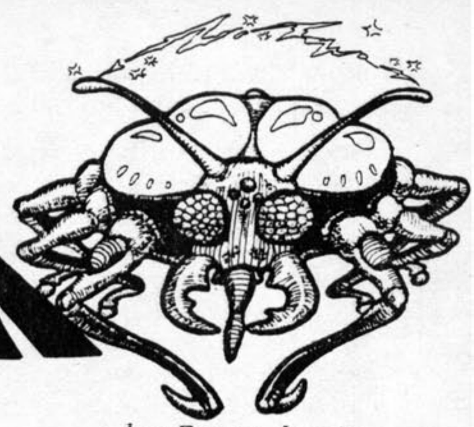
After nailing the first two (they always stick close together), you may have to bank left quickly to get number 3 in front of you. CAUTION! Don't bank too steeply! If you stand the plane on its wingtip, it will start to sink like a rock. Remember that you're only 90′ or 100′ up! I think I flew into the ground more than I got shot down while I was developing this approach. A notch or two more throttle will help pull you around quickly. Keep banging that space bar!

By the time you've downed the fourth fighter, you will be very close to the enemy airbase. Surprise! Fighter number 5 is back on the ground, where you can't harm him even with your bomb! He won't take off until you enter the square where the enemy ammo dump is — your mission was to bomb it, remember? This guy is faster than stink and, if you head toward the target now, he will be on you from behind faster than you can turn around! Instead, circle back toward the northeast and don't go for the dump until you get back up near the mountains. As soon as number five comes after you, turn and deal with him as you did with the others. Once the skies are clear, you can bomb the dump at your leisure. This gives you an additional 3 points and you can now take your 8 point total back home to refuel, rearm, and try the whole thing over again. Good hunting!





BUG ATTACK



A REVIEW

by Dave Jones

BASIC INFORMATION	
NAME:	Bug Atack
TYPE:	Arcade
SYSTEM:	Apple II and Atari 400/800
FORMAT:	Diskette
# PLAYERS:	1
AUTHOR:	James L. Nitchals
PRICE:	$29.95
PUBLISHER:	Cavalier Computer P.O. Box 2032 Del Mar, CA 92014 (714) 755-8143

Centipedes, the popular arcade game with the multi-colored dancing spiders, the kamikaze fleas, and the endless procession of centipedes, is my current arcade obsession. So it was with a great deal of anticipation that I booted up **Bug Attack**, by Cavalier Computer.

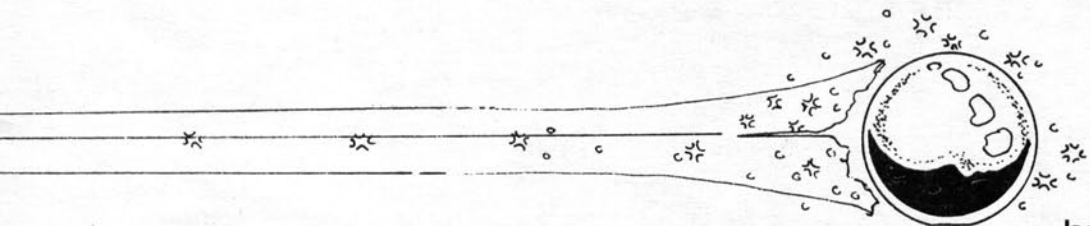
The player begins **Bug Attack** with three beetles, which can be moved laterally across the bottom of the screen. Movement is accomplished by either the A/S and or arrow keys, or a game paddle. The beetles come equipped with stingers, which are fired by either pressing the space bar or the paddle button. At the lower left corner of the screen is stacked the number of beetles remanining to the player. At the top of the screen are the counters for the amount of fuel remaining and the player's score.

The graphics of all aspects of**Bug Attack** are an impressive combination of imagery and color. Like Centipedes the playing field is dotted with randomly placed vegetation. The vegetation in **Bug Attack**, however, varies throughout the game; thus far, I've encountered cactus, clovers, and bouquets. The insects also vary, with sucessive waves of ants, millipedes, and medflies bombarding the player. One of the most appealing aspects of the game is the imaginative use of color. Each level of play is represented by a different color, with the vegetation and the insects changing hue as the player advances.

The insects in **Bug Attack** are organized into waves of ants, millipedes, and medflies. To the tune of "When Johnny Comes Marching Home", the attack begins with a random placement of ants marching back and forth across the screen. In wave two, a millipede snakes its way down the screen, moving left to right and back again, dropping a level at each end of the screen. The millipede bears the closest resemblance to the arcade's centipede, but unlike Centipedes, striking a section of the millipede does not alter the path of the rest of the millipede. Wave three consists of medflies. The medflies begin in a column like the millipede, but follow a semi-circular path around the screen. As the column works across the screen, individual medflies drop out of the column to pursue their own erratic pattern. Only the ants are affected by the vegetation on the screen, reversing direction and dropping a level when encountering the obstruction. The other insects simply move through the vegetation.

Striking an insect with the beetle's stinger transforms the bug into vegetation; firing three stingers into the vegetation removes the vegetation from the screen. Interception of an insect and beetle results in the beetle's demise in an explosion of color and sound. In addition, the bugs all come loaded to the teeth (mandibles?) with an endless supply of wicked looking daggers which they hurl downward as they trek across the screen. Needless to say, the daggers are also inimical to the well-being of the beetle. One frustrating aspect of the game is that insects can drop daggers with impunity from atop or behind vegetation, but that same vegetation blocks any stingers fired at the insect. One quickly learns to clear firing lanes through the vegetation to allow clear shots at the bugs.

Continued on page 38



PINBALL MANIA

by Stanley Greenlaw

BASIC INFORMATION

NAME:	David's Midnight Magic
TYPE:	Pinball Arcade Game
SYSTEM:	Apple II or Apple II Plus 48K
FORMAT:	Diskette (DOS 3.2 or 3.3)
# PLAYERS:	1 to 4
AUTHOR:	David Snider
PRICE:	$34.95
PUBLISHER:	Broderbund Software 2 Vista Wood Way San Rafael, CA 94901 (415) 456-6424

Until this week I thought that I had outgrown the all-night game playing binge. So why did I look at my watch and see that it was 2:30 AM and I was still playing the game I had started earlier in the evening? When I have friends over to play computer games I, from time to time, remind the more zealous players that they need not pound the keyboard to bits in order to destroy whatever foe they are facing. So why is it that I find myself pounding the keyboard so hard that I've caused the game to bomb several times? I used to think I was a completely sane person. So why did I almost throw my Apple out the window when I had 59 bonus points, a 3x multiplier and then tilted the game? I can blame David Snider and Broderbund Software for my irrational behavior. It's all due to their new game **DAVID'S MIDNIGHT MAGIC.** Players of **RASTER BLASTER** will instantly recognize **MAGIC. MAGIC** has the same feel as the earlier **RASTER BLASTER** however **MAGIC** is a better game.

MAGIC is a traditional pinball game that can be played on your Apple II computer. The graphics, colors, and sounds all combine to produce a very realistic pinball game. Up to 4 people can play at a time (alternating turns) with top ten scores listed after the game. One thing I like very much about **MAGIC** is that, if you wish, the scores are displayed. To store the high scores on disk you must snip out the write protect tab, unfortunately this negates your warranty. Thus, Broderbund has left us with an undesirable decision to make. I, for one, like the all time scores and have altered the diskette accordingly.

The pinball field is divided into an upper and a lower playing area. Each area has a pair of left and right flippers. The flippers are controlled by the game paddle buttons. Each button controls two flippers (i.e. the left button controls the left flipper on both levels). As with an arcade pinball game bonus points are scored for hitting certain rollovers, gates, etc.

Although I do not claim to be a pinball wizard I have found certain strategies that lead to good scoring possiblities. I found that if I divide the game into an upper level game and a lower level game I can create a high scoring situation.

Upper level play — 1) Try to keep the ball on this level as long as possible by keeping the ball to the left of the left flipper. 2) Develop a technique for getting the ball to roll down the left side incline. As the ball reaches the left flipper try to hit the ball into the "S" trap. This will score 10 bonus points and will set up multiple ball play later. While trying to get the ball into the "S" trap you will most likely hit the five drop targets on the left, thus scoring 5,000 and 5 more bonus points.

Lower level play — Once the ball gets down to the lower level concentrate on two things: 1) kick the ball through the loop at the upper end of this level; 2) get the ball back up to the upper level. The former will increase the multiplier (thus shooting your score way up there if you have a lot of bonus points), while the latter will again increase your chances of getting bonus points.

Something new with **MAGIC** is the ability to "jostle" the game to get extra bounce on your shots. This feature, along with the related TILT possiblity adds a lot to the game. You "jostle" the game by hiting the space bar during your shot. Some practice here can really help your score. However, too much "jostling" can cause a tilt which will cause not only the loss of the ball in

Continued on page 38

MICRO - REVIEWS

CREATURE VENTURE

BASIC INFORMATION	
NAME:	Creature Venture
TYPE:	Text Adventure Game
SYSTEM:	Apple II (Applesoft, 48K)
FORMAT:	Diskette
# PLAYERS:	1
AUTHOR:	
PRICE:	$24.95
PUBLISHER:	Highlands Computer Services

Stashbuck mansion is the setting for **CREATURE VENTURE**, an adventure game that utilizes Hi-Res graphics and some clever animation. Your goal is to rid Stashbuck mansion of the creatures that are haunting it and to find the treasure that your Uncle Stashbuck buried just before his death.

Along the way you will come across objects to help you in your quest, including a key, a jar of water, a swarm of fireflies, and a bat in a cage. Some of the monsters or creatures that you will encounter are the boogeyman, the gooey oozlebub, and Lucifer himself. Other hazards include a maze and a cave-in.

CREATURE VENTURE abounds with secret passages. You must find the clues to the magic words that open them. The program, also, gives hints in the form of riddles. For instance, a note on a bed reads, "Goldie slept here but Alice was smarter". Lewis Carroll fans should not have much trouble with that one.

The program is self-documenting. All the instruction needed to run are contained within the program. Normally you communicate with the program with two word commands but for the directions and inventory a one letter command is sufficient. Also, it is only necessary to enter the first three letters of the verb and the first four letters of the noun.

CREATURE VENTURE has a save game feature which comes in handy because the program tends to end rather abruptly. Another nice feature is the summary of commands. Pressing return will display the last ten commands. After you have ridded Stashbuck mansion of the creatures and found the treasure you are offered a chance to play the master game and find yet more treasure.

I think **CREATURE VENTURE** is an excellent game for beginning adventurers. Many adventure gaves leave the beginner stuck in one spot and unable to contunue. If you get stuck with **CREATURE VENTURE,** you can always move to another part of the mansion, and perhaps find a clue to help you with your previous problem.

Just because **CREATURE VENTURE** is good for beginners does not mean it can not be injoyed by experienced adventure players as well. It will provide many hours of challenging entertainment for even the seasoned expert. In conclusion I would recommend **CREATURE VENTURE** for either the novice or expert. I do not think you will be disappointed.

CREATURE VENTURE, by Highlands Computer Services, runs on the Apple II (Applesoft, 48K. disk) - $24.95.

William Zurfluh

DON'T FORGET TO MAIL IN THE "READER'S INPUT DEVICE" (p. 40)

ZOSSED IN SPACE

ZOSSED IN SPACE (Adventures International, Box 3435, Longwood, Fla. 32750) $14.95, cassette; 16K TRS-80; sound, one player, playing time 10 min. to 45 min.; cannot be saved.

Zossed in Space is a machine language program that challenges you to pilot your trading ship through 100 sectors of space, overcome a variety of problems, accumulate 100 trading units and destroy 10 enemy ships. You have 3 ways of fueling, 2 ways of accumulating trading units and dozens of ways of getting killed in the attempt. Your ship moves from the bottom of the screen to the top for each sector. As it appears at the bottom of the next sector, the scene changes. And should a piece of anti-matter or a meteorite be sitting there —BANG.

There are over a dozen different types of sectors, from a maze of anti-matter, to a black hole, to a vortex. Once you have been through them a few times you will find a strategy which will usually get you past. Some of them are so totally random

Continued on page 38

PINBALL: *Continued from page 35*

play but also any bonus points gained with that particular ball (hence my irrational behavior mentioned above).

There also is, under certain circumstances, a feature for saving a ball about to be lost down one of the side columns. Unfortunately, to activate this feature requires striking the ***z***, ***x***, ***c*** or ***v*** key for the left side column or the ***m***, **.**, **/** key for the right column. It is very difficult to hit these keys while your hands are tied up with the game paddles, and fractions of a second are all important. I just try to hit the appropriate row of keys with my palm hoping that the inevitable "jostle" that will also occur (you can't help hitting the space bar this way) will not tilt the game.

In conclusion, I enjoyed **DAVID'S MIDNIGHT MAGIC** immensely and recommend it to anyone even remotely interested in pinball action games.

ZOSSED: *Continued from page 36*

that they defy analysis. Beating this will not be a snap, no matter how much experience you have. One other interesting thing about **Zossed in Space** is the use of sound. It is not just an embellishment as, in many cases, it is the only warning you will get that a problem has cropped up.

While this is an arcade style game, graphics are it's weakest feature. Surprisingly, this ceased to bother me after I had played a few games. The lack of a save game routine annoyed me more, though you can put the game on hold while answering the phone or putting out dinner.

This is the kind of game you can introduce to a visitor with only a couple of minutes instruction, as well as play yourself on a continuing basis. If you find yourself stuffing too many quarters into arcade machines, this is a fairly good alternative.

John L.Vogel

BUG ATTACK: *Continued from page 34*

Each 'garden' in **Bug Attack** is made up of a wave of ants, a wave of millipedes, and a wave of medflies. The player begins each garden with the fuel counter set at 99. If he fails to clear all three waves before the fuel runs out, his beetle will self-destruct. Losing the beetle in the midst of a wave causes the counter to be reset, a fresh pattern of vegetation to be redrawn (filing in any firing lanes the player may have succeeded in clearing), and the wave to restart with a full complement of insects. As the player progresses through the game, the gardens become more difficult, with more ants appearing on the screen (though apparently not more millipedes or medflies), more vegetation congesting the screen, and the insects dropping daggers with greater speed and frequency. In between every two gardens, the action shifts slightly. During one such intermission, some sort of tableau is staged (it appears to be a dancing bug being eaten by a flower); in another, the player faces a millipede that carries no daggers, but speeds up every time a stinger is fired; and in a third, the player faces medflies flying in a different formation.

In general, the sound effects accompanying the game enhance play. Appropriate noises accompany the firing of stingers, the transformation of bugs into vegetation, and the totaling of the score at the end of each insect wave. My one complaint about the game is the irksome screeching that accompanies the display of the title screen which occurs every time the player loses his last beetle. I found the noise to be so offensive that I would turn off the sound for the entire game just to avoid its noxious effect.

Although the game can be played with the keyboard, my experience is that the level of control available using keys is inadequate to effectively master or enjoy the game. Game paddles are highly recommended. Also, the variety of colors in the game make **Bug Attack** one of the most beautiful games available for the Apple. Naturally the game can be played on a B/W or green monitor, but much of the game's appeal will be lost.

Centipedes affecionados and arcade purists, who insist on an absolute replication of an arcade game, will be disappointed with **Bug Attack.** Beyond a common fascination with entomology and an imaginative use of color, the two games are very dissimilar. The game strategy and mechanics of **Bug Attack** bear no resemblance to those of Centipedes. But do not let this dissuade you from taking a look at the game; **Bug Attack** is an excellent game in its own right. Normally, I tire quickly of arcade games, as the monotony of repeated play sets in. But the novel touches of **Bug Attack,** such as the variety of vegetations and patterns of color, and the intermissions which break up the action between insect waves, served to maintain my interest in the game hour after hour. The author of the game is to be complemented on his packing such a successful combination of imaginative flair and technical expertise into the confines of the Apple II.

Bug Attack, from Cavalier Computer, is available for the Apple II (48K) $29.95.

NAPOLEON: *Continued from page 14*

large battle on an unwilling foe, allowing for the total destruction of the enemy force. Leadership was especially crucial in the Napoleonic battles, and playing Napoleon's campaigns shows that Napoleon can be worth as much as 100,000 men in combat.

11.3 Lines of communication were important for both supply and morale reasons. Units cut off from their supply lines would not be able to recover from their actions as would a unit in supply. Armies (especially Allied ones) were often very concerned about maintaining their communications lines. In fact it was this fact which Napoleon tried to take advantage of in the Waterloo campaign (failing when Blucher went against all reason and retreated his army from his communications and towards Waterloo). Because of this, we have given units on their uncut communications lines the ability to recover from fatigue faster than otherwise possible. The French army put less emphasis on maintaining communications with the rear areas (since they were usually attacking and thus constantly changing the rear area), and for this reason we have allowed the French to ignore their com lines for the first 4 days of each campaign.

14.0 Communications lines were also developed for the purpose of funneling the movement of armies, causing each army to decide where it will launch its offensive operations ahead of time. Most armies found it necessary to advance along major roads, with the details for supplying the army prearranged. The com line forces this for in order to move quickly without fatiguing, an army must advance along its com line (using force orders). Thus, although players may leave their com line, it becomes difficult to maintain control over the advance of their army if they do.

DOCUMENTATION: *Continued from page 23*

> house beneath its tongue and the great armies of the Dead Lord used its spine for maneuvers.

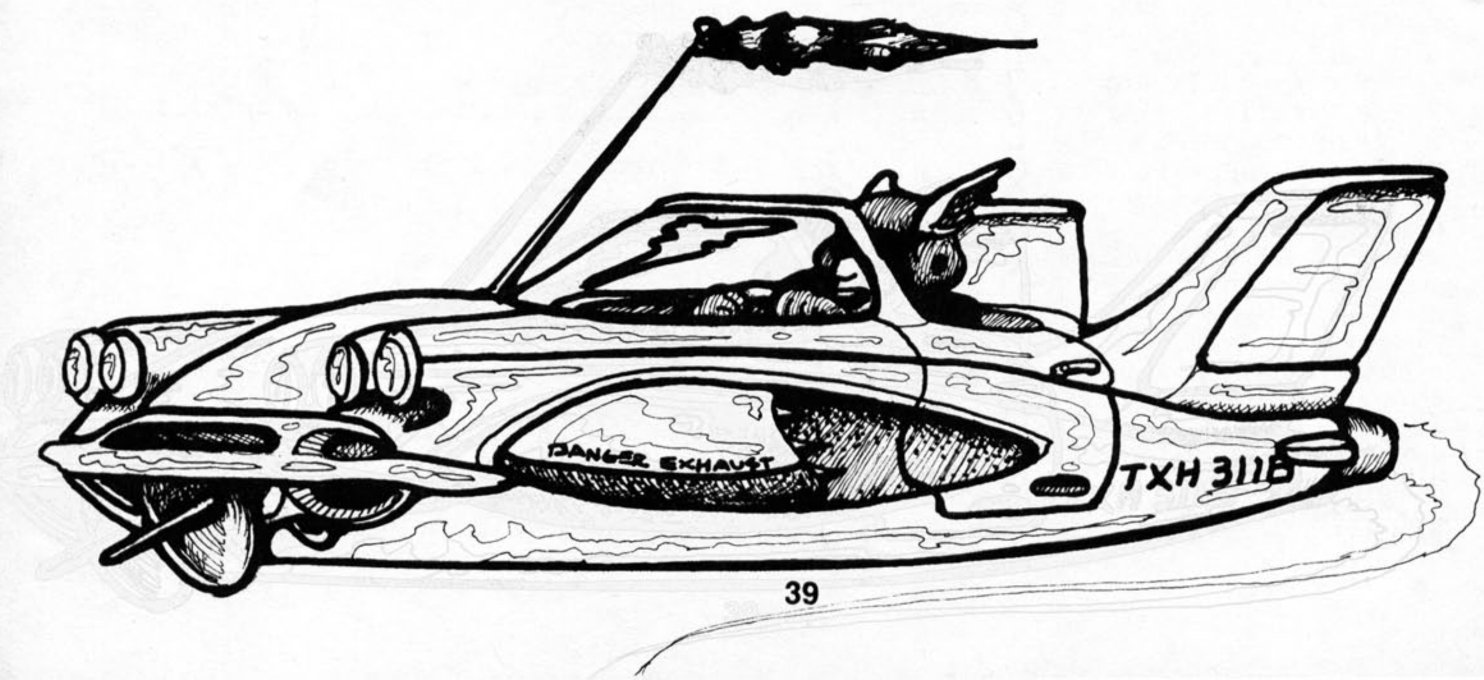
The Alkemstone itself was formed in the hollow between the Spectral Serpent's eyes, and nourished there like a baby.

The goal at least, was to provide a context for the game that followed and a fantasy anchor-point for the players.

A good manual will not save a bad game, but it will make a good game much better, more accessible, and more satisfying.

I believe that in the future computer game manuals will contain fewer and fewer basic operating instructions. We're fast discovering that the software itself can provide smoother and faster instruction when programmed with enough thought. I believe the manual will ultimately be part of a multi-media approach including software, book, playing map and other artifacts — a packaged fantasy world. Perhaps for a mystery computer game we would even include the clues for the player to examine physically. Reading the manual would be like finding the guidebook to a lost or parallel world on your front sidewalk. You would pick up this guidebook, read it, and suddenly find yourself transformed into a citizen of this other world, until recently afflicted with amnesia. The book would make you want to return there. The computer would provide a veiwscreen into that world.

With more sophisticated software we will see a new medium of entertainment to rival the theater, TV, movies. The manuals for this new medium will have to become part of the presentation; part of the fantasy.



READER INPUT DEVICE

We want your opinion. Please clip or photocopy this page, fill it out, and send it in. One of the best ways of expressing what you like or dislike about CGW and computer games is to send in this form. Let us know what you think.

GAMES

Rate the following games which were treated in the first two issues of CGW. Use a scale of 1 (terrible) to 9 (outstanding) for each of the catagories below;

PRESENTATION: Rate the graphics and sounds against other games that run on the same machine; **GAME DESIGN:** Rate the game design itself. Apart from the presentation is the game well designed, playable, interesting? Are there problems in the design which make the game less than it should be?; **DOCUMENTATION:** Does the documentation do what it is supposed to (i.e. provide the player with the pertinent information he needs to play the game well)? Is it well written. Is it interesting to read?; **LIFE:** Does the game wear well? Does one bore of the game easily or does it still command interest after multiple plays?; **PRICE:** Is the game worth what it sells for?

Enter 0 in the first box for a game which you have not played.

COMPUTER GAMING WORLD
1919 E. Sycamore #203
Anaheim, California 92805

	Graphics	Design	Doc.	Life	Price
TORPEDO FIRE					
ROBOT WAR					
B-1 NUCLEAR BOMBER					
CRUSH, CRUMBLE & CHOMP					
PRESIDENT ELECT					
MAJOR LEAGUE BASEBALL					
COMPUTER BASEBBALL					
DRAGON'S EYE					
EASTERN FRONT					
MIND THRUST					
MISSION ESCAPE					
ODYSSEY					
REVERSAL					
TIME TRAVELER					
NAPOLEON'S CAMPAIGNS 13 & 15					
THE SWORDTHRUST SERIES					
GALAXY					
CASTLE WOLFENSTEIN					
TANKTICS					

	Graphics	Design	Doc	Life	Price
JAWBREAKER					
GALACTIC CHASE					
PROTECTOR					
OPERATION APOCALYPSE					
GENETIC DRIFT					
RED ALERT					
WALL STREET (CE)					
CARTELS & CUTHROATS					
ESCAPE FROM ARCTURUS					
MISSION: ASTEROID					
MYSTERY HOUSE					
THE WIZARD & THE PRINCESS					
ZORK					
BLITZKRIEG (Programma)					
ULTIMA					
THE BATTLE OF SHILOH					
THE SHATTERED ALLIANCE					

ARTICLES

Please rate the articles in this issue on a scale of 1 (terrible) to 9 (outstanding). If the article doesn't interest you enter 0 .

SO YOU WANT TO WRITE A COMPUTER GAME	
SOUTHERN COMMAND	
GAME DOCUMENTATION	
ODE TO JOY	
PINBALL MANIA	
NAP. CAMPAIGN NOTES	
WIN A MILLION	
THE SILICON CEREBRUM	
TIGERS IN THE SNOW	
YOU TO CAN BE AN ACE	
ESCAPE FROM WOLFENSTEIN	
NORDEN+	
BUG ATTACK	

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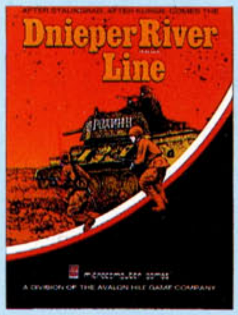
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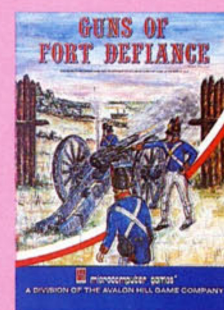
VOYAGER

A solitaire computer game that challenges the human player to explore the four levels of an alien spacecraft's maze-like corridors and rooms in 3-D simulated graphics, all the while avoiding robots programmed to blast any intruders. In order to win, the human must destroy all power generators and escape or hunt out and annihilate the killer robots. **VOYAGER** comes with color-animated graphics and sound capabilities for computers so equipped.



DNIEPER RIVER LINE

A fictionalized engagement between the Russian and German forces in the southern Ukraine in 1943. The game challenges you, the German commander, to repel Russian efforts to breach the Dnieper River defensive positions. Soviet units, controlled by the computer, seek to overrun the thin German line and capture sufficient objectives to attain victory. **DNIEPER RIVER LINE** has four levels of difficulty and comes complete with over 300 illustrated counters and a mounted mapboard.



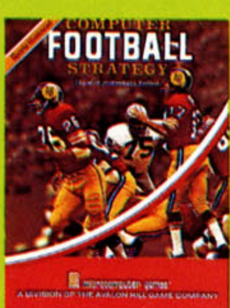
GUNS OF FORT DEFIANCE

In this exciting arcade game, you are the commander of a 19th century artillery piece in a besieged stockade. For each shot you must specify a type of ammunition—ball, cannister, shell or spherical case—and fuse length (if applicable), and set the elevation and deflection of the cannon. The computer controls the enemy forces, randomly attacking with cavalry, infantry or another artillery piece.

CONTROLLER

A **real-time** simulation of air traffic control in which you will have to guide the approach and landing sequence of up to 8 aircraft. There are three types of aircraft: Light Planes, Airliners, and Private Jets, with each type having a different rate of climb, turning ability, stall speed, ceiling, fuel consumption and fuel capacity. **CONTROLLER** transforms your microcomputer screen into a realistic "radar scope"; also, each aircraft's heading, velocity, and altitude is continuously displayed on a separate chart next to the radar scope.





COMPUTER FOOTBALL STRATEGY

Thrilling computer version of Avalon Hill's famous board game. Based on the award-winning Sports Illustrated game of professional football; forces the player to constantly make the right decisions about his team's offensive and defensive formations. Match wits against the computer or against a live opponent.



GALAXY

Have you ever wanted to conquer the universe? In **GALAXY,** players send their galactic fleets out to explore and conquer the universe, solar system by solar system. The planets discovered may be barren worlds or they may possess immense industrial capacity and defensive ships to resist colonization. **GALAXY** comes with sound effects (for computers with sound capability) and allows from 1 to 20 players to compete against each other or the computer. A different star map is randomly generated for every game.



COMPUTER FOREIGN EXCHANGE

Two to four players own and manage multi-national companies in various cities throughout the world. Changing conditions require each player to make constant decisions after considering the financial resources of his company and his opponents. A variety of situations will determine likely changes in currency rates. To win, a player must form and implement the most successful strategy.

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B-1 NUCLEAR BOMBER
You are the pilot of a B-1 bomber on a mission over the Soviet Union. You must fly through stiff Russian defenses to the target city, bomb it and return home. Your computer controls the Soviet MIG fighters and surface-to-air missiles. You must rely on your electronic counter measures and self-defense missiles.

NORTH ATLANTIC CONVOY RAIDER
In the Bismarck convoy raid of 1941, the computer controls the British convoys and battleships. Will the Bismarck sink the Hood, only to be sunk by the Rodney and King George V, as in history? Or, will the Bismarck cripple or sink the British Home Fleet and go rampaging through the convoy lanes?

LORDS OF KARMA
Like an intriguing puzzle! The fun is in deciphering secrets while exploring a mythical, magical city and countryside, while at the same time avoiding lurking monsters. You tell the computer what you want by typing simple sentences. The computer has many surprises in store.

MIDWAY CAMPAIGN
Your computer controls a huge force of Japanese ships whose objective is to invade and capture Midway Island. In the actual engagement, the Japanese made several tactical errors which cost them the battle. Your computer probably won't make the same mistakes! You command the badly outnumbered and outranged U.S. Naval Forces.

NUKEWAR
Nuclear confrontation between two hypothetical countries. Defend your country by massive espionage efforts, or by building jet fighter bombers, missiles, submarines and anti-ballistic missiles. Your cold and calculating computer will choose its own strategy!

TANKTICS
Armored combat on the Eastern front of WWII. Includes full-color mounted mapboard and counters. You, as the German tank platoon leader, start the game outnumbered 2 to 1. However, you choose your tank types before each of 5 scenarios. You also specify what your opponent, the computer, is to have before going after or defending the specified objective from the Russians.

COMPUTER ACQUIRE
New Second Edition! The object of the game is to become the wealthiest person in this "business" game about hotel acquisitions and mergers. For 2 to 6 players it is a subtle game of interplayer strategy. As a SOLITAIRE game you play against the computer. One can even pit the computer against itself.

EMPIRE OF THE OVERMIND
Recent recipient of the GAME OF THE YEAR award by Electronic Games Magazine. Enchanting solitaire game. The Overmind, a tyrant that is part machine, part spirit of evil, cleverly overthrew the great king, who escaped and planned revenge that has taken 1,000 years to fulfill. Now, YOU must travel to the Empire of the Overmind and destroy the abomination.

PLANET MINERS
One to four players compete with each other and the computer to stake valuable mining claims throughout the solar system in the year 2050. Each player must decide which ships to send to which planets and when to try "dirty tricks" like a sabotage and claim jumping.

CONFLICT 2500
In 2500 AD, earth is threatened by attacking aliens programmed with an infinite number of attack strategies with which to tease the player who must defend earth. A variety of spaceships on the screen adds an extra dimension to the excitement. A game for one to ten players in which you can control the length of the game and its difficulty.

COMPUTER STATIS PRO BASEBALL
Recreate an entire baseball season, championship or world series with real life player statistics. Avalon Hill has analyzed full season statistics for each player, converting it to computer memory so each performs in your game just as he does in reality.

COMPUTER STOCKS AND BONDS
Here's your chance to be a Wall Street genius. Players choose a general strategy and invest in the stocks that fit their game-plan. Play it safe, gamble or do a little of both. In a "bear" market players investing heavily could lose their shirts, while a "bull" market would cause them to make great gains.

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